

**SYMPOSIUM**

# A short history and some results of the dermatoglyphic studies in Hungary

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**ABSTRACT** Dermatoglyphics began with dactyloscopy in Hungary in the early 1900s. Since then, the interest in several fields of dermatoglyphics has arisen, e. g. paleodermatoglyphics, heredity of the dermatoglyphic traits, dermatoglyphics in medical disorders, dermatoglyphics of different populations in Hungary, dermatoglyphics in questioned paternity as well as the study of the palmar and plantar creases. Due to the numerous studies published in these fields, it is impossible to list all of them, therefore this paper highlights only the results of some of them.

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history of dermatoglyphics in Hungary  
studies in different fields of dermatoglyphics in Hungary

Although the term “dermatoglyphics” was coined by Cummins and Midlo (1926), dermatoglyphics as a scientific discipline began with the publication of Purkinje’s thesis (1823) and Galton’s classic book, “Fingerprints” (1892). Even though the primary object of Galton’s studies was to develop a personal identification system, he investigated the biological variation as shown by fingerprints, the unchangeable characteristics of the fingerprint patterns through longitudinal examinations, the inheritance as well as the racial variation of fingerprint patterns. In spite of the fact that interest in dermatoglyphic research continued unabated from the beginning of the twentieth century, dermatoglyphics entered into a phase of rapid expansion attracting a great number of scientists from all segments of biology, medicine and biological anthropology during the second half of this century.

In Hungary, dermatoglyphics also began with the introduction of the personal identification system based on fingerprints by Pekáry, a police superintendent of one of the districts of Budapest in 1902 (Illés 1984). Two years later he already had a directory of fingerprints of 6,000 criminals. The first handbook of dactyloscopy was published by Gábor and Arányi in 1905. The true dermatoglyphic studies started with the recording of the fingerprints of the population of the village Tépe in East-Hungary by Csörsz (1929), but he sent them to Bonnevie, who made known a few data of them (1929). Bak (1934) gave a brief report on his twin-studies, but he published no data. Balogh (1935) did not publish either the majority of the data of his study carried out on 700 individuals. The first paper, which is cited in the dermato-

glyphic studies even these days, was published on the heredity of some dermatoglyphic traits by Csík and Malán (1938). During the time from the 1960s the interest in dermatoglyphics arose rapidly. Due to the numerous studies published in this field, it is impossible to list all of them, therefore this paper highlights only the results of some of them.

**Paleodermatoglyphics**

The oldest fingerprints found in Hungary were published by Cseplák (1975, 1982), who found them on the 6,500-7,000 year-old pottery fragments of a neolithic and a late copper age site.

**Heredity**

Csík and Malán (1938, 1939a, b) studied the digital patterns, the main lines, the distance of the interdigital triradii, as well as the patterns of the interdigital fields, hypothenar and thenar in twins. They showed the effects of the genetic factors to these dermatoglyphic traits.

**Medical disorders**

Molnárné Szilágyi (1965) was the first in Hungary, who investigated the dermatoglyphic traits of mentally retarded children. She was followed by Buday (1976) and Nyilas and Gönczi (1982). They all found differences in the investigated traits among the groups of the mentally retarded children. Psychotic patients was studied only by Molnár (1972) and Gyenis et al. (1990); they found differences between the dermatoglyphic traits of the patients and the normal controls.

Dermatoglyphics of patients with diabetes mellitus (Barta et al. 1970), with obesity (Regöly-Mérei et al. 1982), cere-

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bral gigantism (György and Oláh 1977) and Rubinstein-Taybi syndrome (Földes and Groák 1971) were also studied.

Horváth (1969) was the first who compared the dermatoglyphics of children with autosomal trisomy 21 (Down syndrome) to normal controls. His results, as well as Molnár-né Szilágyi and Tornai (1970) results agreed with the data of other studies of this autosomal trisomy (Schaumann and Alter 1976). Dermatoglyphics of patients with other autosomal and gonosomal chromosomal aberrations were reported by several authors (Méhes et al. 1971; Osztovcics et al. 1971; Papp et al. 1972; Osztovcics et al. 1974; Osztovcics and Mátyus 1975; Juhász et al. 1977; Mihai et al. 1978). Dermatoglyphics of congenital disorders of the hands have only been studied by Gyenis (1972) and Fazekas et al. (1974).

### Questioned paternity

Dermatoglyphic traits are used in the investigations of the questioned paternity. Papers in this field were published by Földes (1953-54), Ökrös (1957-58, 1965) and Susa (1985).

### Population dermatoglyphics

The pioneer of the studies of the dermatoglyphic variations of the different populations in Hungary was Malán, who published the data of the digital patterns of 500 males and 500 females in 1939. There are only two systematic studies at disposal in Hungary till now. The greatest dermatoglyphic sample of Hungarians (N = 2,601) was taken by Tóth from 21 rural populations from different parts of the country (Gladkova and Tóth 1982/1983a). Unfortunately, the finger and palm prints were collected only from males, therefore the data could not be compared with other populations of Hungary. The dermatoglyphic traits were analysed mainly by Gladkova and it was concluded that the data of these Hungarian male series were within the limits of the variation of the Europid geographical race. Only in the males of Szendrő and Taktabáj (both situated in Northern-Hungary) may be shown "the slight influence of mongoloidity" (Gladkova and Tóth 1982/1983b).

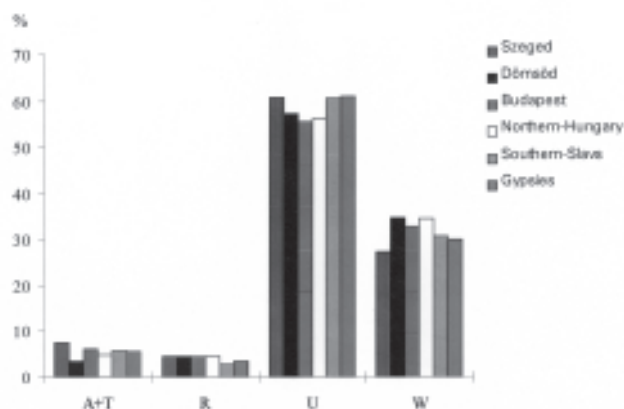
The other systematic study was made by Gyenis (1984). The material was collected from 13 villages of North-Hungary, from the population of Palócs, one of the largest ethnic groups of the Hungarians. The sample consists of 1,071 males and 979 females. The majority of the villages can be regarded as permanently inhabited since the 13<sup>th</sup> or 14<sup>th</sup> centuries, except for three of them which were destroyed during the Turkish occupation in the southern and middle parts of Hungary in the 16<sup>th</sup> and 17<sup>th</sup> centuries. The great proportion of their present populations is of Slovak origin, but a smaller proportion of people of Slovak origin can be found in the other villages, too. Based on the dermatoglyphic traits Mahalanobis distances were calculated which separated well the populations mostly by Slovak origin from those

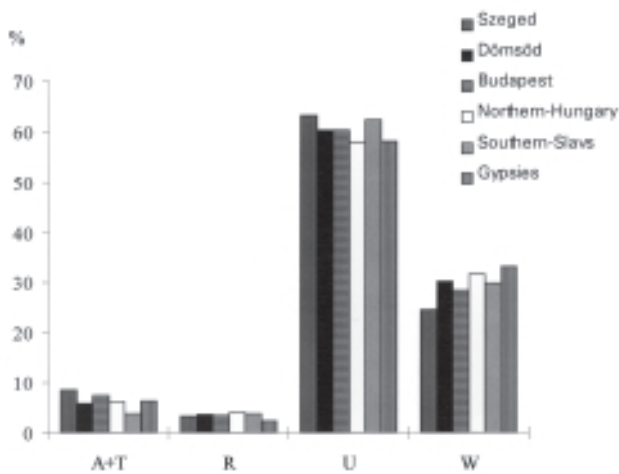
which were overwhelmingly of Hungarian origin. Similar results were obtained by cluster analysis which separated the populations essentially into the same groups as with the Mahalanobis distances. Naturally, the populations overwhelmingly of Hungarian origin did not form a homogenous group but were divided into some subgroups, since their geographical situation, historical development and the rate of the Slovak migration were different. These results were in accordance with those of the ethnic anthropological studies in the area of the Palóc ethnic group carried out by Henkey (Henkey and Kalmár 1976, 1979). Characteristic differences were also found in somatic and somatoscopic traits between populations overwhelmingly Hungarian and Slovak origin and also populations mixed only with smaller proportions of Slovaks.

There are some others, but mostly "sporadic" studies from other parts of Hungary, too. Gyenis (1975) reported the data of three neighbouring populations situated in the middle part of the country. Dermatoglyphics of other populations were presented from Budapest (Osztovcics et al. 1971) and from Szeged, the largest city of South-Hungary (Thoma 1969), but the majority of these sporadic studies reported the data of some populations of East-Hungary (Szilágyi and Tóth 1980; Pap 1984; Nyilas and Gönczi 1987).

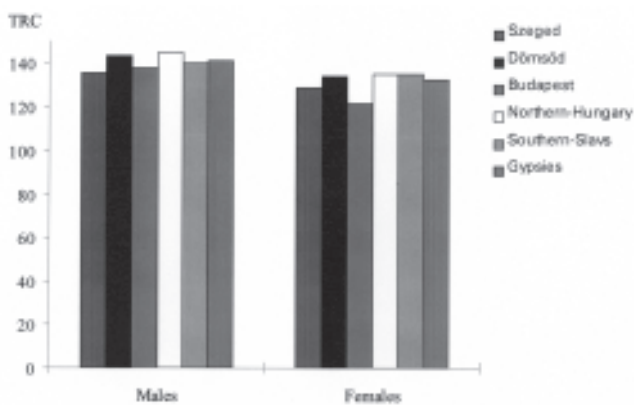
Dermatoglyphics of two ethnic minorities of Hungary were also analysed. Gyenis (1979) reported some dermatoglyphic traits of a Southern-Slav population. The largest ethnic minority of Hungary is the Gypsy one. Nagy and Pap (1998) compared the data of the Gypsies and the Hungarians of the Bodva valley (North-Hungary). The data of the largest sample of the Gypsies (n = 1,678) from 23 settlements of the country was presented by Tauszik (1987), who found differences among the three groups of the Gypsies distinguished by language (Hungarian Gypsies, Wallachian Gypsies and Romanian Gypsies). Differences between Gypsies and Hungarians were also reported by Tauszik and Nagy (1987).

Figure 1. Frequency distribution of digital patterns in males of some populations in Hungary.





**Figure 2.** Frequency distribution of digital patterns in females of some populations in Hungary.



**Figure 3.** Means of total ridge counts (TRC) in males and females of some populations in Hungary.

However, on the Figure 1 and 2, where the distribution of the digital patterns of some Hungarian populations (Szeged: Thoma 1969; Dömsöd: Gyenis 1975; Budapest: Osztovcics et al. 1971; North-Hungary: Gyenis 1984), as well as Southern-Slavs (Gyenis 1978) and Gypsies (Nagy and Pap 1998) are shown, no significant differences can be found among them. Similar results are presented on the Figure 3 with the TRCs of the same populations.

There is only one available study of patterns on middle and proximal phalanges of two populations (Szakmár and Lajosmizse) situated on the middle part of the country (Gyenis et al. 1972).

There are some populations in Hungary, which show a tendency to endogamy, and the dermatoglyphics of two of them were published by Pap (1979) and Szilágyi (1987).

Thoma (1974) calculated multivariate dermatoglyphics

distances among the geographical races and he concluded that the correspondance between interracial dermatoglyphic similarity pattern and the evolutionary tree of *Homo sapiens*, as it was reconstructed by fossils, agreed well with each other.

The dermatoglyphics of the sole and toes were a neglected field of the discipline in Hungary, since only Susa (1985) reported data of it.

There was a greatest interest to the palmar and plantar creases during the last decades. Pap (1964) was the first who published the data of the simian crease in some populations of Hungary. Gyenis and Héra (1971) were the first who published data of the secondary creases of the palm. They were followed by Méhes (1972), Pap (1972), Gyenis (1974), Héra (1976, 1979), Molnár and Szilágyi (1984) and Nyilas and Medveczky (1987). Plantar creases were investigated only by Susa (1982, 1984).

It is necessary to mention that dactyloscopy has developed further during this century, from the beginning of the dermatoglyphics with Pekáry's fingerprint directory and with Gábor and Arányi's book (1905) on dactyloscopy in Hungary (Vonák 1959, 1962; Bakonyi 1975; Illés 1984, and others).

Finally, there is only one book in Hungarian which sums up the history and the major fields of dermatoglyphics (Gyenis 1993).

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