Population Genetics of the peoples of Iran I. 
Genetic polymorphisms of blood groups,
serum proteins and red cell enzymes

Genetic polymorphisms of six blood groups and seven biochemical genetic markers were investigated in six Iranian populations (Turks, Kurds, Lurs, Z abolis, Baluchis and Zoroastrians). Eight of the genetic systems (ABO, MNSs, Kidd, C3, AP, AK, PGM1 and EsD) showed conclusive heterogeneity among these populations. Comparison of gene frequencies with the few available samples of Iranian populations demonstrated an intra-ethnic and extensive overall genetic diversity in the Iranian plateau. A gradient of C3*F gene was also discernible within the geographical region of Iran which may reflect the relics of the historical movements of different racial groups in this region. The present genetic variation may reflect the differences in the structure of these populations, the analysis of which is further attempted in the accompanying paper.

Introduction

The present-day genetic diversity of Iranian populations consists of many different peoples, including Mongols, Turks, Kurds, Arabs, Greeks and others, and their genetic distinction has been maintained by historical, physical, cultural, religious and linguistic barriers. In an endeavour to understand the existing genetic differences, Boue and Boue (1956) reported the first blood group study of an Iranian population. Since then several regional and ethnic populations in the country have been studied for some serological traits and a few for selected biochemical polymorphisms.
(Bowman 1964, Sunderland and Smith 1966, Walter and Bajatzadeh 1968, Farhud and Walter 1972, 1973, Farhud et al., 1973, Lehmann et al., 1973, Farhud et al., 1978, Seyedna et al., 1984; Papíha et al., 1982, 1985). A comprehensive study of several polymorphic systems for the people of the Caspian littoral was reported by Kirk et al., 1977, and recently several populations — Bandari, Turkoman, Armenians, Assyrians and Persians — have been extensively studied for their genetic variation (Akbari et al. 1984, 1986a, 1986b). Despite several of these genetic investigations, there still remain numerous groups for which genetic information is completely absent, and for several relatively newly-described biochemical genetic markers knowledge of the Iranian populations is minimal. The present investigation describes genetic variation in six regionally and culturally distinct ethnic groups of Iran.

Subjects & Methods

The following six populations inhabiting different regions of Iran were investigated:

Turks: The Turks of Persia are generally grouped with Uzbeks and Turkomans of the adjoining Russian Republics. They come from central Asiatic stocks but contain by intermarriage a considerable Iranian genepool. The subjects for the present study were taken from Rezaieh in North West Iran.

Kurds: The present day Kurdish community varies from nomadic tribal groups to well settled town dwellers and they occupy a vast area in south-west Asia. They belong to the Sunni sect of Islam. Morphologically, the Kurds display great variation from tribe to tribe, and there are differing views about their origin. The subjects studied also came from Rezaieh.

Lurs: The Lurs are still largely tribal. Their language is a particular dialect of Persian and they belong to the Shiite sect of Muslims. The origin of the Lurs is unknown, but it is believed that they are part of the original Iranian stock that migrated to the east of the Caspian Sea during the first half of the first millenium BC. The sample studied here was derived from Khorramabad in Lorestan.

Zabolis: Information about the Zabolis is limited. They are the local population from Sistan and Baluchistan in south-eastern Iran. The samples were collected from the city of Zahedan.

Baluchis: The Baluchis of Iran are part of the large group which form the major component of the population of Baluchistan along the border of West Pakistan. They speak an Aryan language akin to Persian. The majority is Sunni. As many as a million Baluchi live in the province of Sistan and Baluchistan. The Baluchi sample was also collected from Zahedan near the Afghan border.

Zoroastrians: The Zoroastrians are the closest to the original Persians and today number in Iran only about 20,000. They trace their ancestry to the Achaemenian period. Their main centre is in Yazd but they also live in Kerman and Tehran. Historically there has been a considerable reduction in their size of population. In the 7th century AD, after the fall of the Sassanian Empire, a large number of Zoroastrians migrated to western India, where they still maintain their religious distinction. For the present study the sample of Zoroastrians was taken from central Tehran.

In five field surveys in 80's, blood samples were collected from 145 Turks, 147 Kurds, 178 Lurs, 118 Zabolis, 111 Baluchis and 171 Zoroastrians. Due to several laboratory limitations, all samples were not tested uniformly for all the systems investigated. The laboratory investigations were carried out in Tehran and in the Department of Anthropology, University of Durham, U.K.

Blood grouping was performed in Tehran. Specimens were tested for antigens A1, A2, B, D, M, N, S, s, K, k, Fy\(^a\) and Jk\(^a\). Three of the six Iranian populations Lurs, Zabolis and Baluchis were tested with five Rh antisera (C, c, D, E, e). Both plasma and red-cell haemolysates were stored at