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# Down subjects and Oriental population share several specific attitudes and characteristics <sup>☆</sup>

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**Summary** Down's syndrome is characterized not only by a typical 'habitus', mental retardation of variable gravity and several alterations of the cardiovascular, respiratory, gastroenteric and immunitary system, but also by specific attitudes and characteristics that are in common with the Oriental population. Starting from the origin of the term mongolism, replaced with other terms such as Trisomy 21, Down's syndrome, and anomaly of Down because of the racist use made in the last century, we propose, in the light of modern knowledge about the heredity of features, a reflection on those aspects and attitudes which highlight a very particular twinning between a Down person and Asiatic peoples.

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## Introduction

Down's syndrome is a condition characterized by a typical 'habitus' and a mental retardation of variable gravity. The face is oriental: the fissures of eyes are oblique and present the epicanthus; the nose is short and the root is flat, the knape of the neck is flat and covered with very loose skin and subcutaneous. The limbs are short and stocky and

a marked laxity of ligaments is present. Several alterations of the cardiovascular, respiratory, gastroenteric and immunitary system can be associated. In addition, specific attitudes and characteristics may be shown evidences.

## Origin of term 'Mongolism'

The first description of Down's syndrome dates back to 1846 when Seguin [1] spoke about a 'furfuraceous cretinism'. In 1866 John Langdon Haydon Down published an ethnic classification of idiotis. In this classification, the author distinguished the idiotis according to an ethnic typology: the Ethiopian, the Caucasian, the mongoloid. Therefore for the first time the term 'mongolism' appeared [2].

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Today this syndrome is nominated with other terms such as Trisomy 21, Down's syndrome, anomaly of Down.

## Down peoples and Asiatic peoples

The strong characteristic, that leads Langdon to compare the Down population to the Asiatic one, is the eyes with a typical almond-form. However, it is possible to highlight other aspects of Down subjects which remind the Asiatic population, such as fine and straight hair, the distribution of apparatus piliferous, which appears to be sparse.

Some attitudes and any daily habitus observed in Down subjects, recall those of the oriental population.

Down persons during waiting periods, when they get tired of standing up straight, crouch, squatting down, reminding us of the "squatting" position described by medical semeiotic which helps the venous return. They remain in this position for several minutes and only to rest themselves this position is the same taken by the Vietnamese, the Thai, the Cambodian, the Chinese, while they are waiting at a the bus stop, for instance, or while they are chatting.

There is another pose taken by Down subjects while they are sitting on a chair: they sit with their legs crossed while they are eating, writing, watching TV, as the Oriental peoples do.

Another aspect of Down person that remind the Asiatic population, are alimentary characteristics. Down subjects adore having several dishes displayed on the table and have a propensity for food which is rich in monosodium glutamate (a salt of glutamate), such as parmigiano, beef broth, tinned food, etc. [3]. The Chinese food abounds in monosodium glutamate that seems to be responsible for the fifth taste or "umami taste" [4] and of the "Chinese restaurant syndrome" [5], (a syndrome characterized by flushing, tightness and breathing-difficulties). Furthermore, it has been observed that Down subjects present a deficit of GABA transmission due to a higher consumption of glutamate. In fact, it seems that a biological limit keeps the brain of Down individuals from having too much glucose, by acting on its intake. Glucose is a precursor of l-glutamate acid via the Krebs' cycle and glutamatic acid, in its turn, is the precursor of GABA [6].

The incidence of thyroid disease in the Down population is another aspect that may be highlighted since it recall the Asiatic population. In fact, thyroid disorders are common in the Down's

syndrome. The prevalence of hypothyroidism has been found to be greater than that of hyperthyroidism. Hypothyroidism may be either present from birth or be acquired [7].

In several studies about the incidence of thyroid disorders in the Asiatic populations, childhood Grave's disease has been reported to be rare, but epidemiological data showed to be higher in Hong Kong children [8]. Another study observed that one large Chinese family harboured susceptibility loci for autoimmune thyroid disease which is distinct from those previously found in the Caucasian population. This suggests that different susceptibility loci exist between different ethnic groups [9].

The tendencies of Down subjects to carry out recreative-rehabilitative activities, such as embroidery, wicker-working ceramics, book-binding, etc., that is renowned, remind the Chinese hand-crafts, which need a notable ability, such as Chinese vases or the use of chop-sticks employed for eating by Asiatic populations.

Perhaps the explanation for their capacities resides in the monkey-like cast of the hand or rather in the single transversal solcus that replaces the normal creases of the flexion of the hand, and their laxity of ligaments. Also this characteristic of the Down syndrome may be considered a point in common with oriental populations.

The trisomy-16 murine, a biological model, could be utilized to understand the molecular and developmental effects associated with abnormal chromosome numbers. In fact, the distal segment of murine chromosome-16 is homologous to nearly the entire long arm of human chromosome-21 [10].

## Conclusion

These observations might highlight very interesting aspects connected to the supernumerary chromosome 21 in Down's syndrome, whereas they are natural features of Asians. It would be just as interesting to understand why the chromosome should be in triple copy to express "these coincidences" in the Down subject, whereas it is sufficient in double copy in Asians, who do not show mental retardation or malformation in various organs or systems.

Furthermore, it may be interesting to know the gravity with which the Downs syndrome occurs in Asiatic population, especially in Chinese population. This study may offer the possibility of to know better the neuropathology mechanisms that are responsible of mental retardation in Downs syn-

drome and to open a new diagnostic and therapeutic way for to operate precociously.

Perhaps we could even clear Langdon of all blame from the accusation of being a "racist" for having first observed a sort of twinning which could be looked at in more depth in the light of modern knowledge on the heredity of features and on genic expression and inactivation.

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