

## **Study on dominant and recessive traits in Tharu community, Sauraha, Chitwan, Nepal**

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### **Abstract:**

It is well known that each trait of an organism is control by specific gene. They are two traits i.e. recessive and dominant. The present study deals with the dominant and recessive traits of Tharu community of Sauraha. Here the recessive traits are dominated over the dominate traits. There are 54.74% of people have recessive traits and only 45.26% inhabitants have dominant traits. 50.98% have free earlobe and 49.02% of people have attached earlobes. In case of size of eyelash, 10% people have long eyelash but 90% people have short eyelash. 42% people have black skin as dominant character and 58% people have intermediate skin color. 94% people have black hair color and only 6% people have brown hair 80% people have straight hairs and only 20% of have curly hairs.

### **Key word:**

Traits, Dominant, recessive, gene, Tharu

### **Introduction**

All people have specific traits. Traits are determined by genes, environmental factors, or both. The phenotypic traits of humans pass from parents to their progeny. It takes place when offspring cells or organisms acquire or become predisposed to the characteristics of their parents or organisms (Anthony 2000).

The complete set of observable traits of the structure and behaviour of an organism is called its phenotype. These traits arise from the interaction of its genotype with the environment.

Heritable traits are known to be passed from one generation to another via DNA, a molecule that encodes genetic information (Darwin,1859).

Through heredity, variations exhibited by individuals can accumulate and cause some species to evolve through the natural selection of specific phenotypic traits (Matthew2011). Traits arise from the interaction of the genotype with the environment. All genetic information is coded in deoxyribonucleic acid. Most of the traits or genes are associated with the X and Y chromosomes. These genes are known as sex-linked genes (Weiling 1991), and their transfer from one generation to the next is known as sex-linked inheritance. The present paper deals with increasing our knowledge of generation in the field of disease inheritance patterns. Some examples of variable traits in humans are ear lobe attachment, tongue rolling, curly hair, dimple chinks, baldness, eye color, skin pigment, etc.

The Tharu people are an indigenous ethnic group that has been living in the Terai region of Nepal for centuries. They are Hindu, but they are adapted their own traditional ritual processes. About 14.67% of Tharu people in Dang district (Nepal) suffer from sickle cell anaemia, and 75 % of Tharu people have sickle cell trait ( Pandey et al.,2022).

The present paper deals with the dominant and recessive traits of Tharu of Sauraha that will bring significant knowledge of the phenotype and how these traits are controlled by genes.

## **Material and methods**

Out of the fifty one inhabitants of Sauraha , the present study was conducted in Sauraha, Ratannagar Municipality, Chitwan district, Nepal. It is considered to be the gateway to Chitwan National Park.2,699 inhabitants of Tharu live in this area. It is situated on the bank of the Rapti river and is famous for eco-tourism.

Open- type questions were prepared and asked to the Tharu people of Sauraha, and data was collected according to their responses.

For data analysis, tabulation and simple statistics have been adopted. The field data was analyzed using Microsoft Excel 2013 and R-software. The table had been prepared, and traits were listed on it. A bar graph was used to express the relationship between different traits.

## **Result and discussion**

Out of the fifty one inhabitants of Sauraha , the recessive characters dominate over the dominant characters. These are 54.74% of people who have recessive characters, and only 45.26 % of have dominant characters.

In case of structure of lips of studied area, 43.13 % people have dominant character as thick lips and 56.86% people have thin lips.

In the case of earlobes, 50.98 % of people have free ear lobes, while 49.02% have attached ear lobes.

Similarly, in terms of eye color, 96.08% of people have black eyes, while only 3.92% have brown eyes.

The people of studied area have long eyelash as only 10% but 90 % people have short eyelash as recessive character.

In case of skin color character, 42% of people of studied area are black as dominant character and 58 % of people have intermediate skin color as a recessive trait.

Regarding the hair color of studied area, 94 % people have black as dominant character and only 6 % people have brown hair color.

In terms of hair type, 20 % of people have curly hair, while 80 % have straight hair.

Similarly, in terms of length of hair, 64.70% of people have dominant characters, while 35.3 % have recessive characters.

Again, in terms of the length of the middle index finger, only 3.92 % of people have a short index finger, and 96.08 % have a long index finger.

Similarly, in the case of the tongue, 60.78 % of people have a rolling tongue as their dominant character, while 39.22 % of inhabitants have an unrolled tongue. Likewise, 16.77 % of people have baldness as a dominant character; while 83.23 % have covered hair as a recessive character. Finally, 19.70 % people have dimple chick as dominant character and 80.30 % people have indentation or small cavity on their chick as recessive character. From the analysis of the data, it was found that

Nature	Dominant	Recessive
Lips	22(43.13%)	29(56.86%)
Earlobe	26(50.98%)	25(49.02%)
Eye color	49(96.08%)	2(3.92%)
Eye lash	0(0%)	51(100%)
Skin pigment	40(78.43%)	11(21.57%)
Hair color	48(94.18%)	3(5.82%)
Forms of hair	10(19.70%)	41(80.30%)
Length of hair	33(64.70%)	18(35.30%)
Finger	2(3.92%)	49(96.08%)
Tongue	31(60.78%)	20(39.22%)
Baldness	6(16.77%)	45(83.23%)
Dimple	10(19.70%)	41(80.30%)

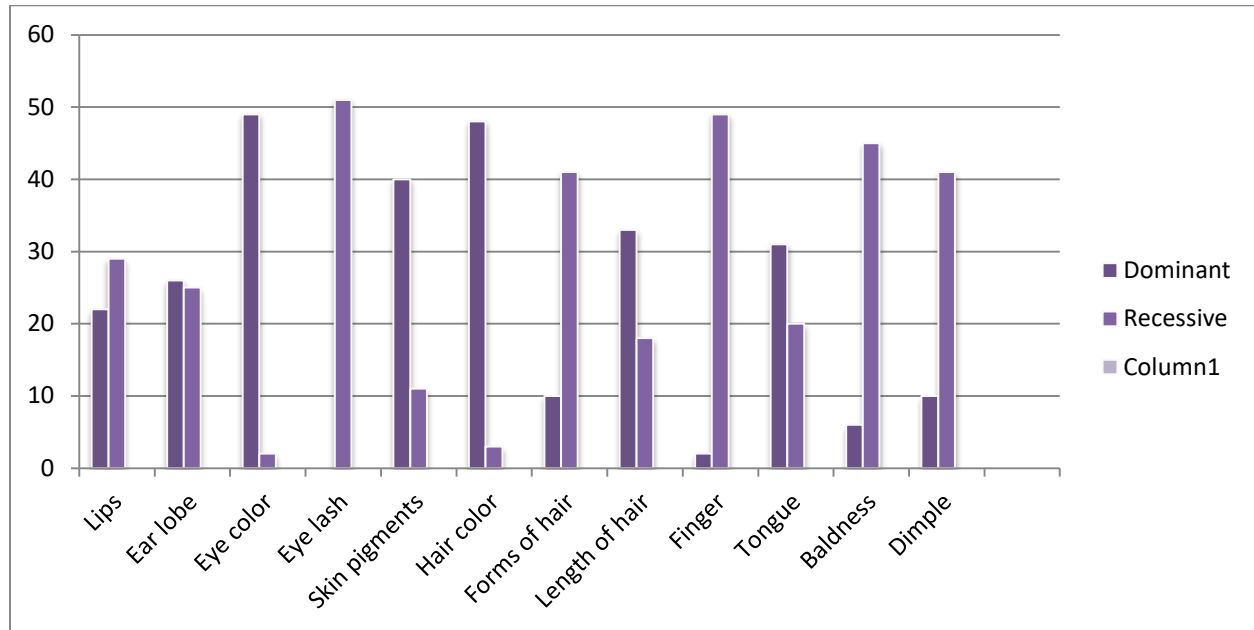
Total number of inhabitants: 51

Total dominance: 45.26%

Total recessive: 54.74 %

Variable trait among individuals

This result revealed a variety of trait that was dominant and recessive according to the different traits recorded in Sauraha.



Graph: Histogram of human genetic traits in the Sauraha area.

## Discussion:

Genetic variation means that biological system-individuals and populations are different over space. Each gene pool includes various alleles of genes. The variation that occurs both within and among populations, supported by individuals within a population, can be identified at a variety of levels. It is possible to identify genetic variation from observations of phenotypic variation in either quantitative or qualitative traits. Traits that vary continuously and are coded for by many genes (e.g., white, pink, or red petal color in certain flowers).

Genetic variations in the Tharu community based on Sauraha and Chitwan National Parks were researched and different genetic traits were observed. A study of 51 people from the Tharu community was conducted, and about 45.26 % of the observed population was found to have dominant genetic traits.

From the overview of all the data regarding trait variability in the Tharu

Community, it was found that in the maximum Tharu community, dominant characters are eye color, skin pigment, length of hair, tongue, and earlobes, while the remaining observed characters are recessive.

### **Conclusions:**

It was concluded that individuals in the same community are different from one another in their morphological traits. This difference arises due to the genetic factor. The number of dominant and recessive characters is 45.26 % and 54.74 % in the Tharu community, respectively. Dominant characters are eye color, ear lobe, skin pigment, length of hair, color of hair, and tongue. Recessive characters with higher frequency are lips, eyelashes, forms of hair, fingers, baldness, and dimples.

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