

## FOR THE RECORD

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# Distribution of Allele Frequencies of a STR (D5S580) Marker in Five Population Groups of Kerala in South India

**POPULATIONS:** Ezhavas, Muslims, Arayas, Nairs, and Vishwakarmas of the Kerala state in south India for a STR marker (D5S580).

**KEYWORDS:** forensic science, DNA typing, population genetics, Indian populations, Indo Dravidian, State of Kerala, India, D5S580

TABLE 1—Allele frequency distribution at D5S580 locus among five populations.

| Allele | Ezhavas<br>(n = 96)<br>Frequency ± s.d | Nairs<br>(n = 46)<br>Frequency ± s.d | Muslims<br>(n = 62)<br>Frequency ± s.d | Arayas<br>(n = 44)<br>Frequency ± s.d | Vishwakarmas<br>(n = 28)<br>Frequency ± s.d |
|--------|--|--------------------------------------|--|---------------------------------------|---|
| 8      | 0.010 ± 0.010                          | 0.022 ± 0.061                        | ...                                    | 0.023 ± 0.022                         | ...   |
| 9      | 0.042 ± 0.020                          | ...                                  | 0.032 ± 0.022                          | 0.023 ± 0.022                         | 0.036 ± 0.030                               |
| 10     | 0.198 ± 0.040                          | 0.434 ± 0.073                        | 0.170 ± 0.048                          | 0.159 ± 0.050                         | 0.321 ± 0.081                               |
| 11     | 0.250 ± 0.002                          | 0.109 ± 0.046                        | 0.145 ± 0.044                          | 0.227 ± 0.060                         | 0.143 ± 0.062                               |
| 12     | 0.073 ± .0200                          | 0.022 ± 0.061                        | 0.032 ± 0.022                          | 0.068 ± 0.031                         | 0.071 ± 0.042                               |
| 13     | 0.104 ± .0310                          | 0.087 ± 0.042                        | 0.113 ± 0.040                          | 0.046 ± 0.031                         | 0.036 ± 0.030                               |
| 14     | 0.063 ± .0200                          | 0.065 ± 0.036                        | 0.097 ± 0.037                          | 0.136 ± 0.050                         | 0.036 ± 0.030                               |
| 15     | 0.094 ± 0.030                          | 0.065 ± 0.036                        | 0.113 ± 0.040                          | 0.114 ± 0.041                         | 0.143 ± 0.062                               |
| 16     | 0.083 ± 0.030                          | 0.044 ± 0.030                        | 0.113 ± 0.040                          | 0.182 ± 0.051                         | 0.071 ± 0.042                               |
| 17     | 0.021 ± 0.014                          | 0.152 ± 0.052                        | 0.032 ± 0.022                          | 0.023 ± 0.022                         | 0.036 ± 0.030                               |
| 18     | 0.042 ± 0.020                          | ...                                  | 0.130 ± 0.042                          | ...                                   | 0.036 ± 0.030                               |
| 19     | 0.010 ± 0.010                          | ...                                  | 0.016 ± 0.015                          | ...                                   | 0.071 ± 0.042                               |
| 20     | 0.010 ± 0.010                          | ...                                  | ...                                    | ...                                   | ...   |

n = number of chromosomes; Allele represents number of repeats.

TABLE 2—Forensic efficiency parameters for D5S580 locus.

| Populations                     | Ezhavas     | Nairs       | Muslims     | Arayas      | Vishwakarmas |
|---------------------------------|-------------|-------------|-------------|-------------|--------------|
| Observed Heterozygosity         | 0.79        | 0.70        | 0.81        | 0.73        | 0.85         |
| Expected Heterozygosity         | 0.86 ± 0.05 | 0.76 ± 0.08 | 0.89 ± 0.05 | 0.85 ± 0.07 | 0.86 ± 0.09  |
| Polymorphic Information Content | 0.98        | 0.74        | 0.87        | 0.83        | 0.82         |
| Power of Discrimination         | 0.94        | 0.88        | 0.94        | 0.93        | 0.91         |
| P value                         | 0.73        | 0.56        | 0.36        | 0.70        | 0.99         |

P = Probability value of maximum likelihood ratio test for Hardy Weinberg Equilibrium.

DNA Extraction: DNA was extracted from the blood of normal, healthy, and random individuals using a non-enzymatic method (1). Amplification of the locus was performed using locus specific

primers (2). Forward primer was labeled with fluorescent Cy5<sup>TM</sup> dye amidite (Amersham Pharmacia Biotech Pvt. Ltd, Sweden). Amplification was carried out in 25 µl PCR reaction mixture containing 25 ng of genomic DNA in an Eppendorf Gradient master Cycler. PCR amplicons were electrophoresed in 6% (w/v acrylamide/bisacrylamide) denaturing gels using ALF

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Express DNA Sequencer (Amersham Pharmacia Biotech). External sizes standard (107, 228, 395 bps) were used in every 10th lane and internal standard (107 and 395 bps) in each lane of the gel.

Analysis of data: Popgene (3). Results: see Tables 1 and 2.

Allele frequency estimate of the marker reveal that alleles were in hardy Weinberg equilibrium. Marker is informative and can be used for forensic DNA analysis and paternity testing.

The complete data set can be accessed via electronic mail from the communicating author at: [mshesh@apsara.barc.ernet.in](mailto:mshesh@apsara.barc.ernet.in) or [sim-rank6@yahoo.com](mailto:sim-rank6@yahoo.com).

## References

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