



Microvariation study of allelic frequency distribution of 17 STRs in each of the Azores islands population

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Abstract. We performed a study of the allelic frequency distribution of 17 STRs along each of the islands of Azores archipelago to look out for statistical differences. From the global samples, we selected those individuals whose both parents were born in the same island. There were no significant differences among islands exception to Flores with some *P*-values not reaching 0.05. © 2006 Elsevier B.V. All rights reserved.

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1. Introduction

We performed a study of the allelic frequency distribution of 17 STRs along each of the nine islands of Azores archipelago. We selected only individuals whose both parents were born in the same island.

To evaluate the microvariation of allelic frequency distribution among the islands we have calculated genetic distances between them as well as the correspondent *P*-values to look out for statistical differences.

1.1. Historic data

In 1427, a Portuguese sailor discovers seven unoccupied islands (Oriental and Central Groups) and claims them for Portugal. In 1452 were sighted the remaining two islands, Corvo and Flores, constituting the Occidental Group [1,2].

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The settlement of all the islands was broken into captaincies, with each captain responsible for bringing settlers and building infrastructure so we present the chronology of archipelago occupation.

Oriental Group:

SANTA MARIA: In 1439 with families from Portugal (Continental Portugal).

SAO MIGUEL: In 1444 with families from Portugal, France and Africa and posterior from Madeira.

Central Group:

TERCEIRA: In 1450 with families from Portugal, Flanders and Madeira.

FAIAL: Near 1466 with colonists from nearest islands and later with some families from Flanders.

PICO: After 1466 with colonists from Faial.

SAO JORGE: Prior to 1483 with colonists from Terceira and later with some families from Portugal and Flanders.

GRACIOSA: Prior to 1510 with colonists from Terceira and later with some families from Portugal.

Occidental Group:

FLORES: In 1528 with families from Portugal.

CORVO: After 1528 with colonists from Flores.

At first also, some Moors and Jews came to Azores but all foreign groups despite being numerous were assimilated namely the language or way of life by Portuguese elements. Due to strategic geographic position, the archipelago became the center of navigation between Europe, Africa and the Americas during the 16th and 17th centuries. Because of that, a few Spaniards, Italians, French, Germans, Scottish, North Americans merged also with locals.

2. Materials and methods

DNA of 203 healthy and unrelated individuals from the Azores archipelago was amplified for the 17 STRs (D8S1779, D21S11, D7S820, CSF1PO, D3S1358, HUMTH01, D13S317, D16S539, D2S1338, D19S433, HUMVWA, TPOX, D18S51, D5S818, FIBRA/FGA, PentaE and PentaD) included in Identifiler [3] and PowerPlex16 [4] commercial kits.

The allele frequency distribution of the 17 STRs in each of the islands is in equilibrium of Hardy–Weinberg (data not shown performed with Arlequin software [5]).

Table 1
Population data by island

Island	Corvo	Faial	Flores	Graciosa	Pico	Sao Jorge	Sao Miguel	Santa Maria	Terceira
Population	425	15,063	3995	4780	14,806	9674	131,608	5578	55,833
<i>n</i>	0	10	1	3	6	19	117	5	42
<i>N</i> Exp	0.4	12.7	3.4	4.0	12.4	8.1	110.5	4.7	46.840

Table 2
Matrix of genetic distances between islands

Island	Faial	Flores	Graciosa	Pico	Sao Jorge	Sao Miguel	Santa Maria	Terceira
Faial	-----	0.24353	-0.05595	-0.00994	-0.00408	-0.00309	-0.00260	-0.01166
Flores	0.24353	-----	0.37960	0.41193	0.26130	0.18922	0.08865	0.20697
Graciosa	-0.05595	0.37960	-----	-0.08799	-0.05574	-0.04485	-0.02570	-0.03166
Pico	-0.00994	0.41193	-0.08799	-----	0.00240	-0.00193	0.01490	0.00518
Sao Jorge	-0.00408	0.26130	-0.05574	0.00240	-----	0.00731	0.04539	0.00340
Sao Miguel	-0.00309	0.18922	-0.04485	-0.00193	0.00731	-----	0.01346	-0.00113
Santa Maria	-0.00260	0.08865	-0.02570	0.01490	0.04539	0.01346	-----	0.02763
Terceira	-0.01166	0.20697	-0.03166	0.00518	0.00340	-0.00113	0.02763	-----

Shaded cells mean *P*-values below 0.05.

AMOVA tests to study the microvariation of the allelic frequency distribution among the islands, namely, genetic distances and correspondent *P*-values were computed with Arlequin software.

Table 1 presents data from Portuguese census of 2001 [6] and from our sample for each one of the nine islands.

3. Results

The results of the AMOVA analysis, namely, genetic distances and *P*-values are reported in Table 2.

4. Discussion and conclusions

The study of microvariation of Azores archipelago population revealed no significant differences between islands with exception to Flores (in the most occidental group) with some *P*-values not reaching 0.05 (maybe due to the sample size).

Our results are consistent with historic data since the settler majority of all islands were from same origin (namely, continental Portugal and Flanders) and they had migrated from one island to another.

References

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