

Announcement of Population Data

# A Basque Country autochthonous population study of 11 Y-chromosome STR loci

Oscar García<sup>a,\*</sup>, Pablo Martín<sup>b</sup>, Leonor Gusmão<sup>c</sup>, Cristina Albarrán<sup>b</sup>, Santos Alonso<sup>e</sup>, Concepción de la Rúa<sup>e</sup>, Carlos Flores<sup>d</sup>, Neskuts Izagirre<sup>e</sup>, Raúl Peñas<sup>a</sup>, Juan Antonio Pérez<sup>a</sup>, Ion Uriarte<sup>a</sup>, Iñaki Yurrebaso<sup>a</sup>, Antonio Alonso<sup>b</sup>

<sup>a</sup>Area de Laboratorio Ertzaintza, Avda. Montevideo 3, E-48002 Bilbao, Spain

<sup>b</sup>Instituto Nacional de Toxicología, Sección de Biología, Luis Cabrera 9, E-28002 Madrid, Spain

<sup>c</sup>Instituto de Patologia e Imunologia Molecular da Universidade do Porto, Porto, Portugal

<sup>d</sup>Unidad de Investigación, Hospital Universitario "Nuestra Señora de Candelaria", Servicio Canario de Salud, Tenerife, Spain

<sup>e</sup>Departamento de Genética, Antropología Física y Fisiología Animal, Universidad del País Vasco, Bilbao, Spain

Received 2 January 2004; received in revised form 26 February 2004; accepted 4 March 2004

Available online 22 April 2004

## Ab ac

Haplotype, allele frequencies and population data of 11 Y-chromosome STR loci DYS19, DYS385, DYS389I, DYS389II, DYS390, DYS391, DYS392, DYS393, DYS438 and DYS439 were determined from a sample of 168 unrelated autochthonous male individuals from the Basque Country. The eight surnames and birth places of the grandparents of all analyzed individuals were of Basque origin. A total of 89 haplotypes were identified by the 11 Y-STR loci. The haplotype diversity (97.49%) and discrimination capacity (52.98%) were calculated. Comparisons were made with previously published haplotype data on other Iberian population samples and significant differences were found.

# 2004 Elsevier Ireland Ltd. All rights reserved.

**Keywords:** Y-chromosome; STR; Basque Country; Population data

**P a** : Blood samples were obtained from unrelated healthy autochthonous Basque donors.

**N:** 168.

**E ac** : DNA was extracted from blood by a standard phenol/chloroform extraction procedure and quantified by slot-blot hybridization using the Quantiblot<sup>1</sup> Human DNA Quantitation kit (Applied-Biosystems, Foster City, CA).

**PCR:** PCR amplification was performed using at least 1 ng target DNA in a 25 µl final reaction volume. The loci DYS19, DYS385, DYS389I, DYS389II, DYS390, DYS391, DYS392, DYS393, DYS438 and DYS439 were analyzed by using the Y-Plex 6<sup>TM</sup> and Y-Plex 5<sup>TM</sup> kits (Reliagene, New Orleans, LA) following the amplification conditions recommended by the manufacturer.

**D c** : The ABI310 and ABI377 sequencers (Applied-Biosystems, Foster City, CA) were used for genetic typing.

**Q a c** : The proficiency was successfully achieved by the proficiency testing of the GEP-ISFG working group [1] and the Y-STR haplotyping quality assurance exercise 2003 (<http://www.ystr.org>) for the markers included in this study.

**Acc a a:** [gobies01@sarenet.es](mailto:gobies01@sarenet.es).

**A a a a:** Haplotype and allele frequencies were estimated by gene counting. Gene and haplotype

\* Corresponding author.

*E-mail addresses:* [gobies01@sarenet.es](mailto:gobies01@sarenet.es) (O. García), [p.martin@mju.es](mailto:p.martin@mju.es) (P. Martín), [lgusmao@ipatimup.pt](mailto:lgusmao@ipatimup.pt) (L. Gusmão), [c.albarran@mju.es](mailto:c.albarran@mju.es) (C. Albarrán), [gpalals@lg.ehu.es](mailto:gpalals@lg.ehu.es) (S. Alonso), [ggpruvac@lg.ehu.es](mailto:ggpruvac@lg.ehu.es) (C. de la Rúa), [cflores@ull.es](mailto:cflores@ull.es) (C. Flores), [ggpizarn@lg.ehu.es](mailto:ggpizarn@lg.ehu.es) (N. Izagirre), [raulupc@yahoo.es](mailto:raulupc@yahoo.es) (R. Peñas), [juanap.l@euskalnet.net](mailto:juanap.l@euskalnet.net) (J. Antonio Pérez), [uriarteupc@yahoo.es](mailto:uriarteupc@yahoo.es) (I. Uriarte), [karan@euskalnet.net](mailto:karan@euskalnet.net) (I. Yurrebaso), [a.alonso@mju.es](mailto:a.alonso@mju.es) (A. Alonso).



Table 2

List of 89 Y-chromosome STR haplotypes detected in 168 unrelated autochthonous males from the Basque Country

Haplotypes	DYS19	DYS385	DYS389 I	DYS389 II	DYS390	DYS391	DYS392	DYS393	DYS438	DYS439	N
H1	12	11, 15	13	30	24	10	13	13	12	13	1
H2	13	11, 14	12	29	24	10	13	15	12	13	1
H3	13	11, 14	14	30	25	11	12	13	12	12	1
H4	13	11, 14	14	31	24	10	13	13	12	11	1
H5	13	11, 14	16	32	23	11	13	13	12	11	1
H6	13	13, 14	14	30	24	9	11	13	10	11	1
H7	13	15, 17	13	30	23	10	11	13	10	12	1
H8	13	15, 18	13	31	24	11	11	13	10	13	1
H9	13	16, 17	13	31	24	11	11	13	10	12	1
H10	13	16, 19	13	30	25	10	11	13	10	12	1
H11	13	17, 18	12	29	25	10	11	12	10	11	1
H12	14	10, 11	13	29	23	11	13	13	12	13	1
H13	14	11, 11	13	29	25	9	13	14	12	12	1
H14	14	11, 11	14	30	23	10	13	13	12	13	3
H15	14	11, 11	14	30	23	11	13	13	12	12	1
H16	14	11, 11	14	30	23	11	13	13	12	13	1
H17	14	11, 11	14	30	24	10	13	13	12	12	1
H18	14	11, 12	13	29	25	11	13	13	12	11	1
H19	14	11, 13	12	28	24	11	13	13	12	12	2
H20	14	11, 13	13	29	24	10	13	12	12	13	1
H21	14	11, 13	13	29	25	10	13	12	12	13	1
H22	14	11, 13	14	30	24	10	13	13	12	12	1
H23	14	11, 13	14	30	24	11	13	13	12	11	1
H24	14	11, 14	12	28	24	11	13	13	12	11	3
H25	14	11, 14	12	28	24	11	13	13	12	12	7
H26	14	11, 14	12	28	24	11	13	13	13	12	1
H27	14	11, 14	12	28	24	11	14	13	12	12	2
H28	14	11, 14	12	28	24	12	13	13	12	12	1
H29	14	11, 14	13	29	23	10	13	13	12	11	1
H30	14	11, 14	13	29	23	10	13	13	12	12	2
H31	14	11, 14	13	29	23	11	13	13	12	12	1
H32	14	11, 14	13	29	24	10	13	13	12	12	5
H33	14	11, 14	13	29	24	11	13	13	12	11	8
H34	14	11, 14	13	29	24	11	13	13	12	12	21
H35	14	11, 14	13	29	24	11	13	13	12	13	2
H36	14	11, 14	13	29	24	11	13	13	12	14	1
H37	14	11, 14	13	29	24	11	13	14	12	12	3
H38	14	11, 14	13	29	24	11	13	15	12	11	1
H39	14	11, 14	13	29	25	10	13	13	12	12	2
H40	14	11, 14	13	29	25	11	13	13	12	12	1
H41	14	11, 14	13	30	24	11	13	13	12	11	2
H42	14	11, 14	13	30	24	11	13	13	12	12	5
H43	14	11, 14	13	30	24	11	13	13	13	12	1
H44	14	11, 14	14	30	23	11	13	13	12	13	1
H45	14	11, 14	14	30	23	11	13	14	12	13	2
H46	14	11, 14	14	30	24	10	13	13	12	11	1
H47	14	11, 14	14	30	24	10	13	13	12	12	2
H48	14	11, 14	14	30	24	10	14	13	12	12	1
H49	14	11, 14	14	30	24	10	13	13	12	12	1
H50	14	11, 14	14	30	24	11	13	13	12	11	8
H51	14	11, 14	14	30	24	11	13	13	12	12	1
H52	14	11, 14	14	30	25	11	13	13	12	12	1
H53	14	11, 14	14	31	24	10	13	13	12	11	2
H54	14	11, 14	14	31	24	10	13	13	12	12	3
H55	14	11, 14	14	31	24	11	13	13	12	12	2
H56	14	11, 15	12	28	23	11	13	14	12	13	1
H57	14	11, 15	13	30	24	12	13	13	12	12	1

and DYS393 [7], resulted in a low non-significant  $R_{st}$  value ( $R_{st} = 0.00402$ ;  $P = 0.35135 \pm 0.0642$ ).

AMOVA results (grouping Spain and northern Portugal in one group and Basques in another) revealed a high percentage of variation among groups (5.61%;  $P < 0.0001$ ).

In conclusion, a Basque Country Y-STR haplotype database should be used in the forensics field rather than a general Spanish population one, in clear contrast to what was until now observed for other Iberian samples (either from Portugal or Spain).

This paper is available at <http://www.tandf.co.uk/journals/1368-2267/20060101>

Acknowledgements