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**ABSTRACT** We have characterized the Y chromosome carried by President Thomas Jefferson, the general rarity of which supported the idea that he, or a patrilineal relative, fathered the last son of his slave Sally Hemings. It belongs to haplogroup K2, a lineage representing only ~1% of chromosomes worldwide, and most common in East Africa and the Middle East. Phylogenetic network analysis of its Y-STR (short tandem repeat) haplotype shows that it is most closely related to an Egyptian K2 haplotype, but the presence of scattered and diverse European haplotypes

within the network is nonetheless consistent with Jefferson's patrilineage belonging to an ancient and rare indigenous European type. This is supported by the observation that two of 85 unrelated British men sharing the surname Jefferson also share the President's Y-STR haplotype within haplogroup K2. Our findings represent a cautionary tale in shog14.50)-308.1(tal.01414.8(pean8ary)d(p)0.8(627.6(fficu14(p)0.8(e)-675TJ

haplotypes (Bandelt et al., 1999), within the program Network 4.1.0.9 ([www.fluxus-engineering.com/sharenet.htm](http://www.fluxus-engineering.com/sharenet.htm)).

To resolve extensive reticulations from the network, weighting was performed according to Qamar et al. (2002).

TABLE 1. Y-STR haplotypes of haplogroup K2 chromosomes

Name	Population	DYS19	DYS388	DYS389I	DYS389II - I	DYS390	DYS391	DYS392	DYS393	DYS434	DYS435	DYS436	DYS437	DYS438	DYS439	DYS460	DYS461	DYS462
J47 <sup>a</sup>	Virginia Jefferson	15	12	12	15	24	10	15	13	11	11	12	14	9	11	10	11	13
J50	Virginia Jefferson	15	12	12	15	24	10	16	13	11	11	12	14	9	12	10	11	13
J49	Virginia Jefferson	15	12	12	15	24	10	15	13	11	11	12	14	9	12	10	11	13
J41	Virginia Jefferson	15	12	12	15	24	10	15	13	11	11	12	14	9	12	10	11	13
J42	Virginia Jefferson	15	12	12	15	24	10	15	13	11	11	12	14	9	12	10	11	13
H1	Virginia Jefferson	15	12	12	15	24	10	15	13	11	11	12	14	9	12	10	11	13
IP154	Iberian Jefferson	13	12	14	14	22	10	13	13	11	11	12	15	9	11	10	11	12,13
IP163	Iberian Peninsula	13	12	13	15	23	10	13	14	11	11	12	15	9	11	11	11	13
IP211	Iberian Peninsula	13	12	14	15	24	10	13	13	11	11	12	14	9	12	10	12	12
IP220	Iberian Peninsula	13	12	14	13	24	10	13	13	11	11	12	14	9	12	10	12	12
IP371	Iberian Peninsula	13	12	13	16	23	10	13	13	11	11	12	15	9	13	10	11	12
IP469	Iberian Peninsula	14	12	13	17	23	10	13	13	11	11	12	14	9	11	10	11	13
IP146	Iberian Peninsula	14	12	13	18	23	10	14	13	11	11	12	14	9	11	10	11	11
IP248	Iberian Peninsula	15	11	14	18	23	10	13	13	11	11	12	14	9	11	11	11	12
IP263	Iberian Peninsula	15	12	13	17	23	11	13	13	11	11	12	14	9	11	11	11	14
IP755	Iberian Peninsula	15	12	13	17	25	10	14	13	11	11	12	14	9	11	10	11	12
IP1023	Iberian Peninsula	15	12	12	17	24	10	14	13	11	11	12	14	9	11	10	11	13
IP427	Iberian Peninsula	15	12	13	16	23	10	15	13	11	11	12	14	9	10	10	11	13
IP572	Iberian Peninsula	16	12	12	16	23	10	14	13	11	11	12	14	9	9	10	11	12
W37	French Peninsula	13	12	14	16	22	10	13	13	nd	nd	nd	15	9	11	10	nd	nd
W40	French	14	12	13	16	23	10	14	13	nd	nd	nd	14	9	11	11	nd	nd
V85	French	13	12	13	16	23	10	14	14	nd	nd	nd	15	9	11	11	nd	nd
GB647	British non-Jefferson	13	12	14	16	22	10	13	13	11	11	12	14	9	11	10	11	12
GB1229	British non-Jefferson	15	12	14	17	23	10	14	13	11	11	12	14	9	11	10	11	12

<sup>a</sup> Names as in Foster et al., 1988. nd: not determined.

If we did not have prior knowledge about the ancestry of the Jefferson haplotype, we might assign it to an Egyptian origin.

Despite its general rarity, there remains a sizeable subpopulation in which Thomas Jefferson's Y chromosome could be frequent—all men named Jefferson. This is because both

Y chromosomes and surnames are patrilineally inherited, and a correlation exists between Y haplotypes and surnames (Sykes and Irven, 2000; King et al., 2006; McEvoy

chromosomes using 11 binary markers and 17 Y-STRs (King et al., 2006). Diverse haplotypes are distributed among six haplogroups (Fig. 2b), consistent with multiple founders for the name, and/or historical nonpaternities. However, two of the men (~2%; males GB1078 and GB1151) belong to hgK2, and both carry the Thomas Jefferson Y-STR haplotype. Their paternal grandfathers were born in Yorkshire and the west Midlands respectively, and neither reports any known familial links to the USA. These men share recent paternal ancestry with the six Virginia Jefferson descendants described by Foster et al. (Foster et al., 1998). How long ago they shared an ancestor is difficult to estimate accurately, but given the identical Y-STR haplotypes, median TMRCA between the British hgK2 Jefferson haplotype and the commonest 17-locus Virginia haplotype can be calculated as 11 generations (with a very broad 95% confidence interval of 0.4–60 generations). A close relationship is supported by the structure of the fast-evolving Y-specific minisatellite MSY1 (Jobling et al., 1998) in these males. The Virginia Jefferson descendants (Foster et al., 1998) share the MSY1 structure (3)<sub>5</sub>(1)<sub>14</sub>(3)<sub>32</sub>(4)<sub>16</sub> (the number in parenthesis referring to 13.3(t74.e0(n)-39e)1416h.-282;ks,mh864.7(ype)2815.wo12.7(p71.2(12(io-60.6(e)and)-J.2(h30(e)15.1(f)0(s120(-)16.9(S)0(T)32.8aene)1es)

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