

# An experimental computer-generated Y-chromosomal phylogeny, leveraging public Geno 2.0 results and the current ISOGG tree

Chris Morley\*

7 February 2014†

## Abstract

The author of this report has created software to (i) facilitate the analysis of new Geno 2.0 data, and (ii) automate the preparation of a comprehensive draft Y-chromosomal phylogenetic tree incorporating publicly available Geno 2.0 Y-SNP data. The second item is presented in Section 1.9.

### Author's note

Thank you for your interest in this project! This document should not be confused with the Genographic Project's still-unreleased "Y-2014" tree.

This report was first made public on 16 July 2013. Since then it has gone very mildly viral. This is the sixth version of this report. I would still like to temper some of the excitement directed toward these initial versions of my experimental Y-tree. Please do not overlook the "experimental" and computer-generated nature of this tree. This report should supplement – not supersede – your haplogroup project administrator's research.

Stated another way, nobody should go out and get their linens embroidered with "M26→L707→YSC0000078" just because of what my experimental tree or predictor said.

The accompanying online Y-SNP-based subclade predictor (<http://Ytree.MorleyDNA.com>) is still using the second (26 July 2013) version of this phylogeny, and a version of the classification algorithm dating back to June 2013. Current research efforts are focussing on fine-tuning the phylogenetic algorithm for full Y data, and this impacts the tree data format. The online tool will eventually be updated, but not until an ongoing redesign of the tree data format has been completed.

The Geno 2.0 data used to create this report comes from public FTDNA project Y-SNP reports, not the Geno 2.0 raw data files. Each Geno 2.0 kit featured in this report has been transferred to FTDNA and then added to a public FTDNA project. Both of these actions were initiated by the kit owner. This report is reliant on the veracity of FTDNA's Geno 2.0 transfer algorithm. Regrettably, there are sometimes discrepancies between a kit's raw Geno 2.0 data and what is reported for that kit on the FTDNA project Y-SNP report. It would be really helpful to have these discrepancies resolved! Most importantly, the FTDNA Y-SNP reports do not disclose no-calls (whereas the raw data does). The algorithm does compensate for this, but it is not always possible to infer whether a crucial SNP reported as non-positive is actually a negative call or a no-call. Additionally, a kit with a high number of no-calls for non-pertinent Y-SNPs may have overall erroneous Y-SNP results, and this cannot be detected if the no-calls are not reported.

Previous versions used the ISOGG SNP database [19] as the sole source for SNP aliases. This version supplements the data from [19] with the SNP alias data from [17] (which in turn extends [18]) and [20]. Some discrepancies exist between these sources.

The R1b-Z2105 portion of this tree is likely inaccurate, owing to the L150 backmutation soon after the initial mutation, and my confusion about how the reported results for this marker should be interpreted.

ISOGG volunteers and Y-DNA project administrators: if you are asked to explain differences between this tree and the ISOGG one, you can save yourselves some time by directing people to read [this FAQ item](#).

Chris Morley

## 1. The need for automation

### 1.1 Background

#### Genographic Project 2.0

The second phase of the Genographic Project [1] was announced in July 2012 [2, 3]. One facet of this project is wide-spectrum Y-SNP testing offered at an accessible price. The aggregation of these results will reinforce much of the existing Y-SNP phylogeny, while concurrently leading to the discovery of new branches and the slight repositioning of some existing branches.

\*Morley Y-DNA Project Administrator; lead researcher, "Northwest England" cluster of R1a-L448. Contact: <http://www.MorleyDNA.com/contact>.

†An earlier version of this report, shaped as a proposal, was released for limited distribution on 5 July 2013.

The initial round of test results was released in December 2012 [4]. The Genographic Consortium is apparently preparing an updated Y-SNP phylogeny, but to the chagrin of genetic genealogy hobbyists it has not yet been released [5].

Manual analysis of this dataset is time-consuming. The vastness of the data is only one factor; there are several additional challenges to overcome before the data can be compared:

- the dataset is growing every day;
- the phylogenetic nomenclature is in perpetual flux;
- the publicly available Geno 2.0 Y-SNP data is decentralised;
- many Y-SNPs go by several names.

Even then, after monitoring the above, there are many more challenges at the comparison stage:

- the main source for publicly available Geno 2.0 data (various Family Tree DNA haplogroup project Y-SNP reports, for example, [6]) does not distinguish between negative calls and no-calls;
- some chip-tested SNPs are proving to be globally erratic [7];
- other chip-tested SNPs may be locally erratic (inconsistent results for an SNP may indicate an inadequate choice of primer, or the presence of additional nearby mutation(s) in one or more derived branches);
- some kits have had additional à la carte testing performed for SNPs not offered on the Geno 2.0 chip;
- a few SNPs have in some branches reverted to the ancestral state, potentially resulting in a false-negative call;
- some SNPs are recurrent, and it can be challenging to separate the multiple instances;
- it is not straightforward to determine where newly-discovered SNPs fit in relation to existing SNPs;
- existing phylogenies, against which comparisons are made, may place some SNPs erroneously, complicating the comparison procedure.

The members of the genetic genealogy community – the majority of them part-time volunteers – would therefore benefit greatly from the introduction of a robust tool to automate, standardise and centralise much of this analysis.

Depending on the cause of the “official” Geno 2.0-based phylogenetic tree’s publication delay, the Genographic Consortium may also benefit from the availability of such automation.

In light of the above challenges, this task is more complicated than it would initially appear. This report showcases the results from an initial attempt to tackle this problem.

## Full-Y sequencing

Full Y-chromosomal sequencing will see growth over the next few years, soon supplanting chip-based wide-spectrum SNP testing as the test of choice for those seeking to extend the Y-chromosomal phylogenetic tree and determine their own position thereon. This technology will circumvent some of the chip-specific issues, but the corresponding increase in data will accelerate demand for automated analytical tools.

## 1.2 Prior Technology

Generally, the genetic genealogy volunteer community is quicker than the academic community to act on new phylogenetic discoveries. ISOGG’s Y-tree [8] can therefore be regarded as the most current phylogenetic authority. But as data volume increases, ISOGG’s volunteers will likely need help in order to keep pace with all the new developments. Many of these volunteers maintain separate, decentralised provisional trees for their own branches/haplogroups of interest. The level of detail varies between haplogroups.

The YCC phylogeny has not been updated since 2008 [9]. The Genographic Consortium’s awaited phylogeny is supposed to supersede this.

Thomas Krahn maintained a draft Y tree [10]. It leads the ISOGG tree in some aspects, and lags behind in others. This too could probably benefit from increased automation.

FTDNA forum user Felix has just released *My Y-SNP Tree*, a free tool for comparing Y-SNPs against Thomas Krahn’s draft Y tree [11].

Ethio Helix has roughly classified some of the higher-level novel Geno 2.0 SNPs, using a non-fuzzy set theoretic approach [12].

Public raw Geno 2.0 data is scarce. Itaï Perez is analysing the Y-SNP facet of this raw Geno 2.0 data [13]. This will in particular be useful for external verification of FTDNA’s calling algorithm (applied during the Genographic-to-FTDNA transfer process).

The YFull service has recently classified 1000 Genomes project samples by terminal Y-SNP, using ISOGG tree 8.57 as the basis [14].

## 1.3 New Technology

Prior to preparing this report, the author developed a Y-SNP-based subclade predictor (now available at <http://ytree.MorleyDNA.com>), with the inputs being a person’s Y-SNP results. It suggests the person’s terminal subclade (or the closest parent subclade tested). This algorithm was able to correctly classify the Full Genomes Y-SNP demo results [15]. It also performed robustly when tested on Geno 2.0 data – either in the form of calls scored from a kit’s raw file, or in the form of calls reported in a public Family Tree DNA project after being transferred from the Genographic project.

The algorithm is most effective when using the ISOGG tree as a basis for classification.

Evidently, the Y-tree clade predictor performs better the more detailed the underlying phylogenetic tree is. And the refinement of a phylogenetic tree is greatly aided by the use of an accurate predictor and other analytical tools. The two pillars bootstrap each other.

To illustrate this, the author has used this Y-tree clade predictor (using the latest ISOGG tree as a basis for comparison) to classify over 2700 sets of publicly accessible Geno 2.0 Y-SNP calls. This information was then used as an input into another algorithm designed by the author – an algorithm developed to automate the construction of a phylogenetic Y-tree, while overcoming the challenges identified above. The technical details of this process will remain proprietary for the time being.

## 1.4 Data

ISOGG's latest Y-tree was used as a starting point. Off-tree SNPs identified by ISOGG as private or phylogenetically unreliable were not used as inputs. The algorithm used to develop these reports will include these SNPs in the output, if they show up in the available Geno data.

Over 2700 sets of Geno 2.0 positive calls (data transferred from the Genographic Project to Family Tree DNA) were used. These Geno 2.0 results were all collected from publicly accessible haplogroup and surname projects, including the haplogroup projects identified in the ISOGG wiki [16]. Coverage was skewed toward the most heavily-tested haplogroups.

User-provided earliest known ancestor information has been removed from this version of the phylogeny.

## 1.5 Results

The output of this automated tree-building process is presented in Section 1.9. See Table 1.1 for notation.

## 1.6 Discussion

Owing to the automated nature of the process, it is straightforward for the author to issue revised computer-generated draft phylogenies, as new information becomes available.

The draft phylogenies resulting from this process will not replace the existing ISOGG tree. But they should help reduce the workload of ISOGG project administrators. It will not make their roles obsolete. Their judgement is still needed to decide which SNPs are worthy of inclusion in the ISOGG tree. Moreover, the algorithm will identify some SNPs with inconsistent information, requiring manual examination in order to place on the tree. The reports developed by the author will serve as a *guideline* for further ISOGG tree expansion; ISOGG will retain editorial control over its Y-tree.

The Genographic Consortium phylogenetic tree – whenever it is published – should be superior to the tree presented here. The Genographic Consortium has a vastly larger and more diverse dataset to work with, and consequently one would expect the resultant paper to contain numerous branches not included here. Additionally, the Genographic Consortium, having access to all the raw data, will know which non-positive calls are negatives and which are in fact no-calls, thereby simplifying the tree construction process. The Genographic Consortium's paper will likely be treated to pre-publication peer review. This will delay the delivery but ensure the quality of the final result. It remains to be seen whether/how/how frequently the Genographic Consortium will update its phylogenetic tree after its initial publication.

Outstanding issues for the experimental phylogeny:

- The downstream SNP coverage statistics for known backmutations need to be corrected.
- Non-Latin letters (from the user-submitted earliest known ancestor descriptions) typeset as question marks.
- Some SNPs are reported in both a subclade and its parent. These are artefacts of the phylogenetic algorithm.

## 1.7 Summary

There is present demand for tools that will automate the production and maintenance of a high-resolution Y-SNP phylogenetic tree. Demand will rise further. This report showcases the results from an initial attempt at tackling this problem.

## 1.8 References

- [1] Eran Elhaik, Elliott Greenspan, Sean Staats, Thomas Krahn, Chris Tyler-Smith, Yali Xue, et al., *The GenoChip: A New Tool for Genetic Anthropology*. *Genome Biol Evol*. 2013; 5(5): 1021-1031, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3673633/>, 9 May 2013 (accessed 15 July 2013).
- [2] CeCe Moore, *National Geographic and Family Tree DNA Announce Geno 2.0*. Your Genetic Genealogist, <http://www.yourgeneticgenealogist.com/2012/07/national-geographic-and-family-tree-dna.html>, July 25 2012 (accessed 5 July 2013).
- [3] Roberta Estes, *National Geographic – Geno 2.0 Announcement – The Human Story*. DNAeXplained – Genetic Genealogy, <http://dna-explained.com/2012/07/25/national-geographic-gen-2-0-announcement-the-human-story/>, July 25 2012 (accessed 5 July 2013).
- [4] Roberta Estes, *Geno 2.0 Results – First Peek*. DNAeXplained – Genetic Genealogy, <http://dna-explained.com/2012/12/11/geno-2-0-results-first-peek/>, 11 December 2012 (accessed 5 July 2013).
- [5] eng.Molgen.org community, *Geno 2.0 Y-phylogeny*. A Genetic Genealogy Community: Y-DNA, Mt-DNA, Autosomal DNA (Molgen.org English Forums), <http://eng.molgen.org/viewtopic.php?f=4&t=1080>, 24 April 2013 (accessed 5 July 2013).
- [6] Łukasz Łapiński et al., *R1a1a and Subclades Y-DNA Project – Y-DNA SNP*. Family Tree DNA Y-Haplogroup Project, <http://www.familytreedna.com/public/r1a/default.aspx?section=ysnp>, 15 July 2013 (accessed 15 July 2013).
- [7] Itai Perez, *Re: [DNA] It's been a month, let's start complaining about Geno 2.0 transfer errors*. GENEALOGY-DNA-L Mailing List, <http://archiver.rootsweb.ancestry.com/th/read/GENEALOGY-DNA/2013-01/1358179571>, 14 January 2013 (accessed 5 July 2013).
- [8] International Society of Genetic Genealogy, *Y-DNA Haplogroup Tree 2013, Version: 9.20*. <http://www.isogg.org/tree/>, 7 February 2014 (accessed 7 February 2014).
- [9] The Y Chromosome Consortium, *Ytree (YCC2008)*. <http://ytree.ftdna.com/index.php?name=YCC2008&parent=root>, 2008 (accessed 5 July 2013).
- [10] Family Tree DNA (Thomas Krahn et. al.), *Ytree (Draft Phylogeny)*. <http://ytree.ftdna.com/>, 2013 (accessed 5 July 2013).
- [11] Felix, *My Y-SNP Tree*. Genetic Genealogy Tools: Open source software for genetic genealogy, <http://www.y-str.org/tools/my-y-snp-tree/>, 3 July 2013 (accessed 5 July 2013).

Symbol Class	Symbol	Description
SNPs	M343	Geno-tested SNPs with positions known to ISOGG [8]. If on a branch with available Geno results: then the available Geno 2.0 results are consistent with ISOGG's positioning [8].
	CTS3368	SNPs unplaced in ISOGG's tree – placement has been proposed by the phylogenetic algorithm.
	DF27	SNPs not Geno-tested (or excluded by FTDNA from the list of positive SNPs). Names and placement come from ISOGG's tree [8].
	Y34	SNPs not Geno-tested and not placed on ISOGG's tree [8]. Be careful: some of these SNPs may be widespread and phylogenetically-insignificant mutations which have just not been widely tested; their true positions could be further upstream. Other SNPs may be private.
	L440	Expected by ISOGG to be at this location, but the Geno 2.0 data suggests otherwise. When observed high up in the Y-tree: FTDNA may have the ancestral and derived states backwards, leading to positive results being scored negative, and vice versa.
	CTS2526 <sup>R<sub>x</sub></sup>	The SNP is recurrent – it has been also placed elsewhere in this tree. Recurrent does not necessarily mean erratic. The subscript <i>x</i> indicates how many instances of the SNP are observed in this tree.
	PAGE65 <sup>b</sup>	ISOGG [8] has identified this instance as a back-mutation.
	CTS109	The novel SNPs upstream of haplogroup <b>R1</b> have been cross-checked against the Full Genomes demo data (comprised of one kit from <b>R1a</b> and one kit from <b>R1b</b> ). Novel SNPs with a superscript <i>b</i> did not test positive in one or both of the Full Genomes demo kits. It remains to be seen which discrepancies were caused by flaws in the Geno 2.0 data and which were caused by flaws in the Full Genomes data. Discrepancies are most abundant at the haplogroup <b>CT</b> level.
Kits	N114522	Kits with Geno 2.0 results. Kit numbers link back to FTDNA project SNP reports; follow the link to see the kit's positive calls obtained from Geno testing, and the positive and negative results obtained from à la carte SNP testing. Surnames and user-provided descriptions of the earliest-known patrilineal ancestor have not been included in this version of the report.
	234391	Kits without Geno 2.0 results, only à la carte or deep clade SNP results.
	▽	A kit with this superscript may belong to one of the non-Geno-tested clades immediately downstream. À la carte SNP testing of the non-Geno-tested clade's (or clades') defining SNP(s) will be necessary to definitively place this kit.
	·GB	ISO 3166-1 code for kit's stated patrilineal country of origin. Codes were invented for the constituent countries of the United Kingdom (GB-E, GB-S, GB-W, GB-NI).
Clades	A1	A clade featuring Geno-tested SNPs.
	A0a	A clade that does <i>not</i> feature Geno-tested SNPs.
	-n	Represents a subclade new to ISOGG's tree, proposed by the author's phylogenetic algorithm. For example, <b>R1b1-1</b> is proposed to be downstream of <b>R1b1</b> (and upstream of <b>R1b1a</b> ). Some of these new sub-clades, if terminal, may have already been deemed "private" by ISOGG.
	?	This branch does not feature any Geno-tested kits, and consequently its position in this phylogeny is unconfirmed.
	△	The position of a subclade with this superscript cannot be fully resolved, because not all sister clades were Geno-tested, and none of the kits in this subclade have had the required non-Geno-tested SNPs tested à la carte.
	A1 <sup>4</sup>	This clade has a footnote. Footnotes usually describe automatically detected discrepancies in the tree.
Coverage statistics	[x/y]	y is the number of kits supposedly downstream of this SNP, and x is the number of these kits that are positive for the SNP. Some non-positive results could in fact be no-calls or back-mutations. If this SNP is situated on a branch untouched by Geno 2.0 testing then the figure (which would be 0/0) is omitted. It is also omitted for SNPs that were not Geno-tested and have no positive-testing downstream kits.

Table 1.1: Notation used in the novel draft Y phylogeny

- [12] Ethio Helix, *Geno 2.0 YDNA SNP Pathways*. Ethio Helix Blog, <http://ethiohelix.blogspot.com/2013/03/geno-20-ydna-snp-pathways.html>, 24 April 2013 (accessed 5 July 2013).
- [13] Itai Perez, *Geno 2.0 Y-Chromosome Genome Comparison: Extending Y-DNA Haplogroup Knowledge via Collaboration*. <http://itai.perez.free.fr/GenoCompare/>, 5 June 2013 (accessed 5 July 2013).
- [14] YFull Y-Chr Sequence Interpretation Service, *YFull 1000 Genomes (Tree)*. <http://www.yfull.com/tree/>, 12 July 2013 (accessed 15 July 2013).
- [15] Full Genomes Corp., *Demo for product: "Comprehensive Y-Chromosome Sequencing"*. <https://fullgenomes.com/demo>, 2013 (accessed 5 July 2013).
- [16] International Society of Genetic Genealogy, *Y-DNA haplogroup projects*. ISOGG Wiki, [http://www.isogg.org/wiki/Y-DNA\\_haplogroup\\_projects](http://www.isogg.org/wiki/Y-DNA_haplogroup_projects), 26 June 2013 (accessed 5 July 2013).
- [17] Gregory R Magoon, Raymond H Banks, Christian Rottensteiner, Bonnie E Schrack, Vincent O Tilroe, Terry Robb, Andrew J Grierson, *Generation of high-resolution a priori Y-chromosome phylogenies using "next-generation" sequencing data*. bioRxive preprint, doi: 10.1101/000802, <http://biorxiv.org/content/early/2013/12/13/000802.article-info>, 24 November 2013 (accessed 27 November 2013).
- [18] David F Reynolds, *ISOGG SNP Compendium Spreadsheet*. <https://www.dropbox.com/s/kp0tdk3tno480ci/ISOGG%20SNP%20Compendium.xlsx>, 2013.
- [19] International Society of Genetic Genealogy, *Y-DNA SNP Index, Version: 9.20*. [http://isogg.org/tree/ISOGG\\_YDNA\\_SNP\\_Index.html](http://isogg.org/tree/ISOGG_YDNA_SNP_Index.html), 7 February 2014 (accessed 7 February 2014).
- [20] James Wilson, *BritainsDNA Y-SNPs (chromo2 YSNP alt names.xlsx)*. via *Your Genetic Genealogist*, <http://www.yourgeneticgenealogist.com/2013/11/a-list-of-alternate-snp-names-for.html>, 20 November 2013 (accessed 2 December 2013).

## 1.9 Experimental Y tree (automated, using Geno 2.0 results)

### Trunk



<sup>1</sup> V164 also found in nearby clade A0a1 (line 6 on this page). One set of instances may be erroneous. Further investigation required.

<sup>2</sup> V164 also found in nearby clade A0 (line 4 on this page). One set of instances may be erroneous. Further investigation required.

<sup>3</sup> V161 also found in nearby clade A1 (line 12 on this page). One set of instances may be erroneous. Further investigation required.

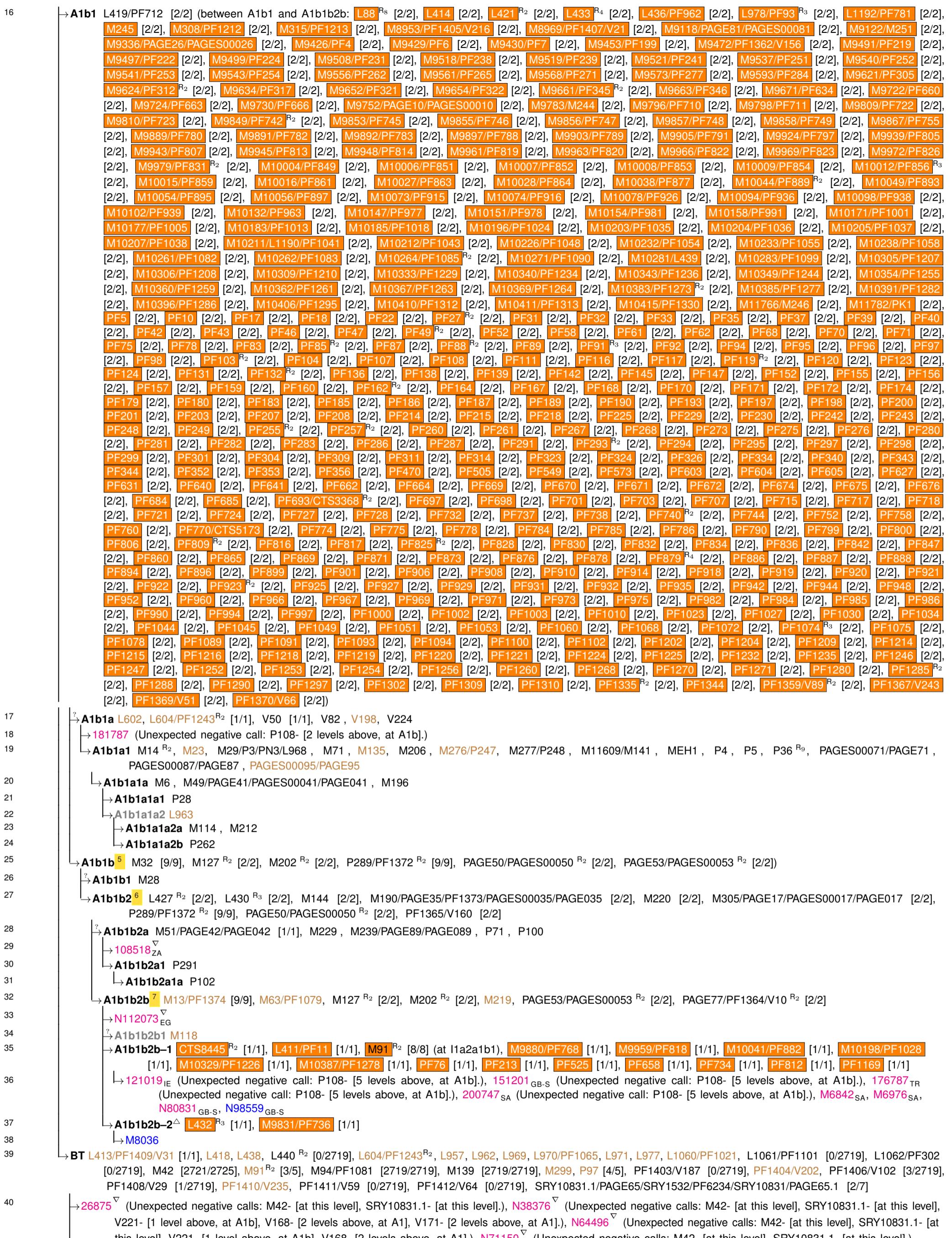
<sup>4</sup> V161 also found in nearby clade A0a1a (line 7 on this page). One set of instances may be erroneous. Further investigation required.

Owing to the scarcity of data for haplogroup A, FTDNA's Geno-transfer algorithm may accidentally have the ancestral and derived states backwards for SNPs in some of the earliest branches, leading to positive results being scored negative, and vice versa. This may be the case for the unresolved SNPs at the A1 level, which have been scored positive in N114522 (in A1a) and N98559 (in A1b1), and scored nonpositive everywhere else; if the polarity has indeed been reversed then these unresolved A1 SNPs would actually be at the BT (A1b2) level.

FTDNA may also have the ancestral and derived states backwards for the P97 and P108 non-Geno results. This would explain the unexpected negatives calls downstream of A1b1. This would also explain why kits thought in the haplogroup A project to belong to A00 and A0 have been classified by this report's underlying algorithm as instead belonging to BT; the BT classification was based solely on each kit being reported P97+.

All in all, the discrepancies shown in haplogroup A are *not necessarily* discrepancies in the underlying ISOGG tree, and in fairness should not be viewed as such before they have been confirmed not to be the result of lab/chip/database/scoring errors.

Kits N114522 and N12179 have been manually excluded from this tree because they each possess – in almost equal numbers – SNPs from the A1a and BT levels of the current ISOGG tree.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.



<sup>8</sup> M150 and PAGE18 also found in nearby clade B2a (line 45 on page 8). M182 also found in nearby clade B2 (line 44 on page 8). M218 also found in nearby clade B2a1 (line 46 on page 8). One set of instances may be erroneous. Further investigation required.

<sup>9</sup> M182 also found in nearby clade B (line 41 on this page). One set of instances may be erroneous. Further investigation required.

<sup>10</sup> M150 and PAGE18 also found in nearby clade B (line 41 on this page). One set of instances may be erroneous. Further investigation required.

<sup>11</sup> M218 also found in nearby clade B (line 41 on this page). One set of instances may be erroneous. Further investigation required.

<sup>12</sup> PAGE3 also found in nearby clade D2–1–1–1 (line 92 on page 9). One set of instances may be erroneous. Further investigation required.

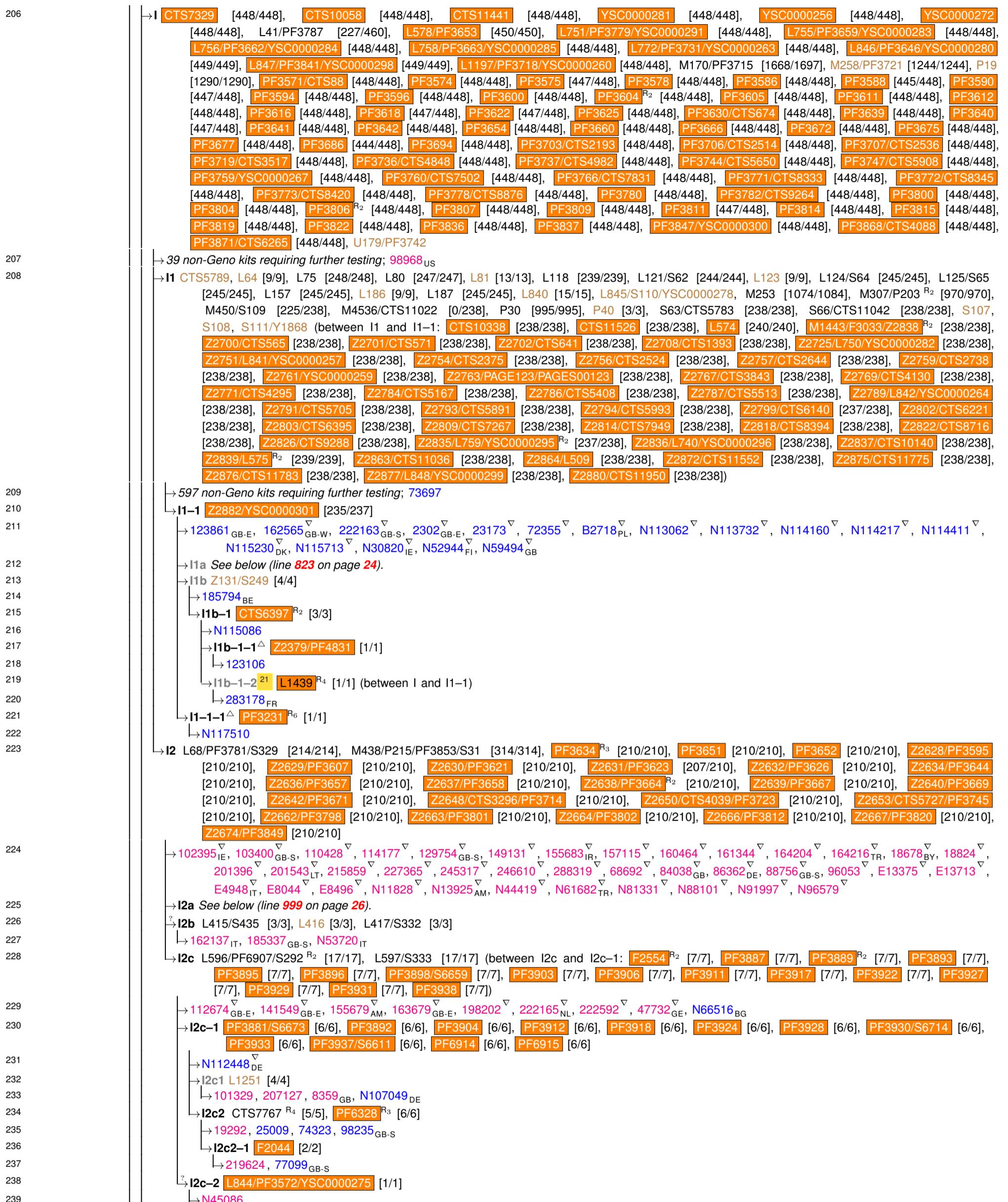
Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.<sup>13</sup> PAGE3 also found in nearby clade D2a1 (line 75 on page 8). One set of instances may be erroneous. Further investigation required.<sup>14</sup> P178 also found in nearby clade E1b1 (line 124 on this page). One set of instances may be erroneous. Further investigation required.<sup>15</sup> P178 also found in nearby clade E1b (line 123 on this page). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.<sup>16</sup> These kits have one or more positive SNPs known or proposed to be at the P level (line 345 on page 15): N115067 (1) and N116137 (1). Further investigation is required.<sup>17</sup> M3480 and M3585 also found in nearby clade G2 (line 177 on page 11). One set of instances may be erroneous. Further investigation required.



Z2805 may have a wider scope than this subclade.

<sup>18</sup> L1411 also found in nearby clade G1b-1 (line 170 on this page). One set of instances may be erroneous. Further investigation required.<sup>19</sup> L1411 also found in nearby clade G1a-1 (line 166 on this page). One set of instances may be erroneous. Further investigation required.<sup>20</sup> M3480 and M3585 also found in nearby clade G (line 155 on page 10). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.<sup>21</sup> L1439 also found in nearby clade I1a3a-1 (line 987 on page 26). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.<sup>22</sup> PF5664 also found in nearby clade T1a (line 273 on this page). One set of instances may be erroneous. Further investigation required.<sup>23</sup> PAGE78 also found in nearby clade T1a (line 273 on this page). One set of instances may be erroneous. Further investigation required.<sup>24</sup> PF5664 also found in nearby clade T (line 269 on this page). PAGE78 also found in nearby clade T1 (line 271 on this page). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.

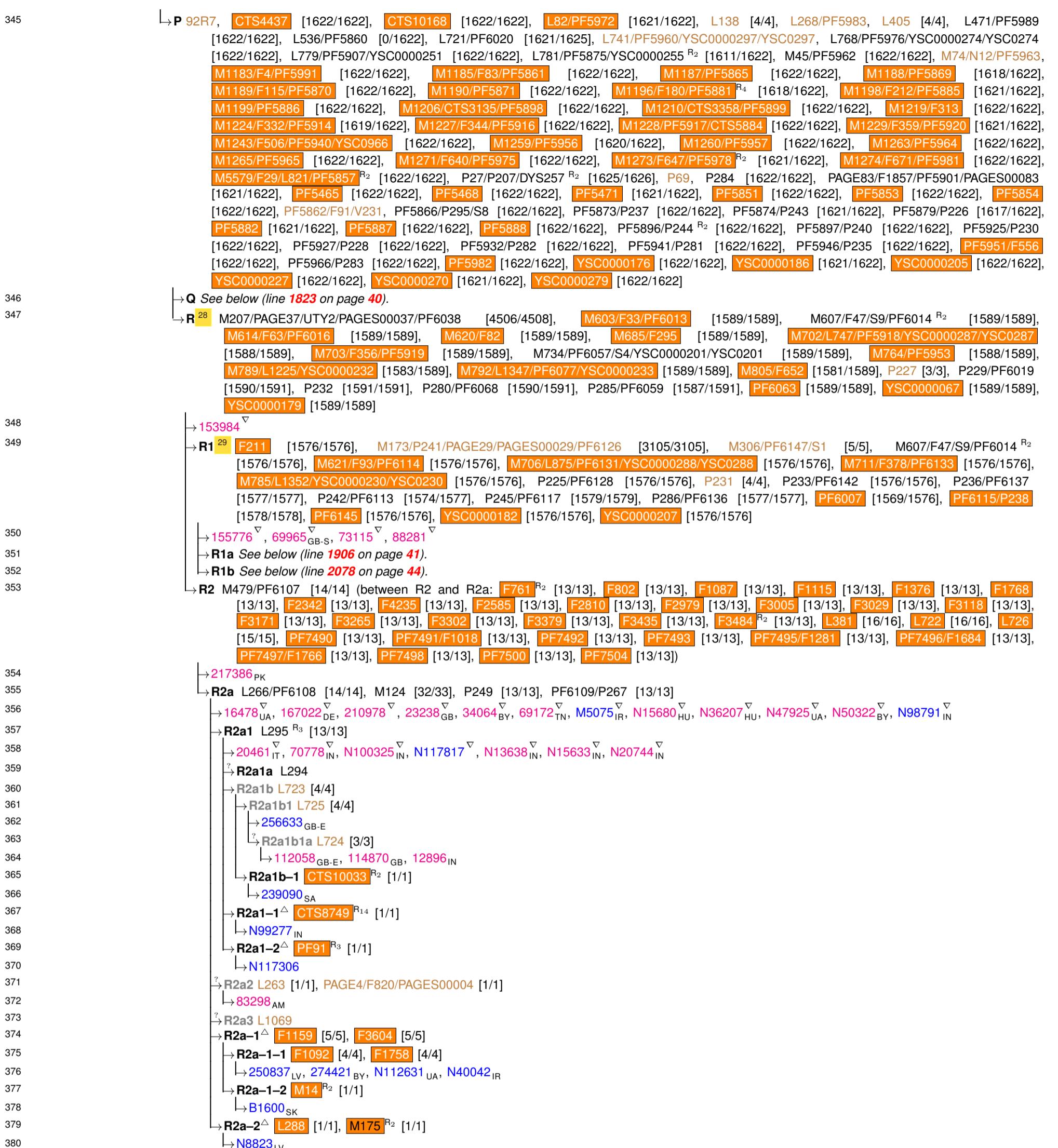
<sup>25</sup> L1322 also found in nearby clade T1a3 (line 316 on this page). One set of instances may be erroneous. Further investigation required.

<sup>26</sup> L1322 also found in nearby clade T1a2b-2 (line 314 on this page). One set of instances may be erroneous. Further investigation required.

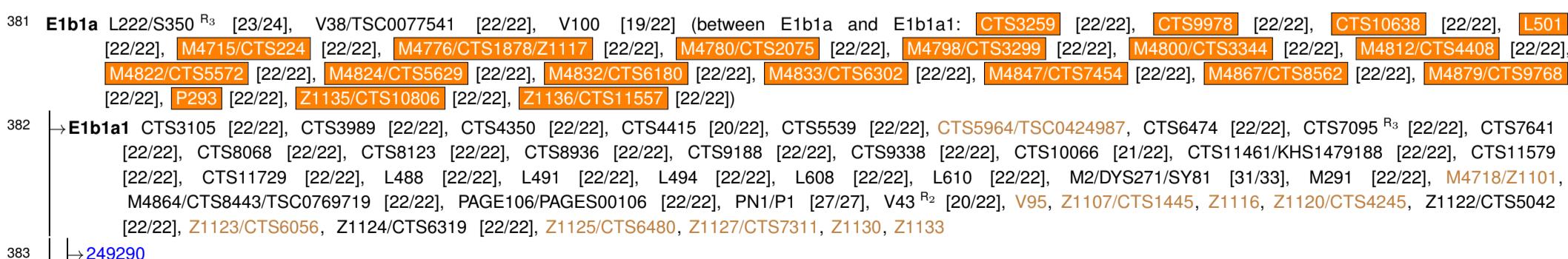
<sup>27</sup> If the classification of kit 213359 is correct, then this would suggest that haplogroup S is closer to macro-haplogroup NO than it is to macro-haplogroup P. Further testing is needed:

- to confirm kit 213359's membership in S-M226;
- to confirm that haplogroup S is indeed derived for F549 and F650;
- to determine the placement of haplogroups K1, K2, K3 and M relative to this potential novel macro-haplogroup.

Positive findings will impact the haplogroup nomenclature system. The author favours the macro-haplogroup names "SON", "NOMS" (French for "names") and "MONKS" –the choice depending on the F549 and F650 statuses of hapogroups K1, K2, K3 and M –over alternatives such as "K(xLT)1" or "(K(xLT))(xM,P)".

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.**E1b1a**

Continued from above (line 126 on page 9)

<sup>28</sup> M607 also found in nearby clade R1 (line 349 on this page). One set of instances may be erroneous. Further investigation required.<sup>29</sup> M607 also found in nearby clade R (line 347 on this page). One set of instances may be erroneous. Further investigation required. Some of these kits may actually belong at the R1a1 level; the phylogenetic algorithm may not be interpreting results for SRY10831 correctly. It would help if these kits were tested for one of the other SNPs at the R1a1 level.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.

384 → E1b1a1a<sup>30</sup> L576/TSC0860384, PAGE66/PAGES00066<sup>R2</sup> [20/20] (between E1b1a1a and E1b1a1a1: L88<sup>R8</sup> [20/20], L432<sup>R3</sup> [20/20], L433<sup>R4</sup> [20/20], M4727/CTS1001 [20/20], M4801/CTS3425 [20/20], M4808/CTS4054 [20/20], M4846/CTS7282 [20/20])

385 → E1b1a1a<sup>31</sup> CTS1847 [20/20], CTS3576 [20/20], CTS10659 [20/20], CTS10914 [20/20], CTS11732/KHS1381212 [20/20], CTS12659 [20/20], L86<sup>R2</sup> [20/20], M180/P88 [20/20], P182 [20/20], PAGE66/PAGES00066<sup>R2</sup> [20/20], Z1111, Z1132

386 → ? E1b1a1a1a M58 , PAGES00027/PAGE27

387 → ? E1b1a1a1b M116<sup>R2</sup>

388 → ? E1b1a1a1c M149

389 → ? E1b1a1a1d M155<sup>R3</sup>

390 → ? E1b1a1a1e M10, M66 , M156 , M195

391 → E1b1a1a1f L485<sup>R2</sup> [12/12]

392 → 6500

393 → E1b1a1a1f1 L514 [9/9] (between E1b1a1a1f1 and E1b1a1a1f1a1: CTS11559 [9/9], M4684/CTS905 [9/9], M4691/CTS7773/Z1293 [9/9], M4705/CTS5038 [9/9], M5663/CTS3046 [9/9])

394 → E1b1a1a1f1a M191/P86 [14/14], U186 [5/9], U247/P253, Z1712/TSC1640819

395 → |→ B1137<sub>ML</sub> (Unexpected negative call: P9- [12 levels above, at CT].)

396 → |→ E1b1a1a1f1a1 M4673/CTS3822 [8/8], U174/P252 [13/13]

397 → |→ 109543<sup>▽</sup> (Unexpected negative call: P9- [13 levels above, at CT].), 113226<sup>▽</sup><sub>NG</sub> (Unexpected negative call: P9- [13 levels above, at CT].), 214931<sup>▽</sup><sub>SA</sub> (Unexpected negative call: P9- [13 levels above, at CT].), 292195<sup>▽</sup>, N113227<sup>▽</sup>, N114930<sup>▽</sup>

398 → |→ ? E1b1a1a1f1a1a P9<sup>R2</sup>

399 → |→ ? E1b1a1a1f1a1b P115

400 → |→ ? E1b1a1a1f1a1c1 P113

401 → |→ E1b1a1a1f1a1d Z1704/CTS8030 [3/3]

402 → |→ 88172<sup>▽</sup> (Unexpected negative call: P9- [14 levels above, at CT].)

403 → |→ E1b1a1a1f1a1d-1 CTS3539 [1/1], Z1690/CTS8639 [1/1]

404 → |→ |→ N35169

405 → |→ E1b1a1a1f1a1d-2 M4451/CTS9106 [1/1]

406 → |→ |→ 189069

407 → |→ E1b1a1a1f1a1-1<sup>△</sup> CTS1313 [1/1]

408 → |→ |→ B2464

409 → |→ E1b1a1a1f1a1-2<sup>△</sup> CTS5299 [1/1]

410 → |→ |→ N117591

411 → |→ E1b1a1a1f1a1-3 Z1867/CTS6161/PF4857<sup>R3</sup> [1/1]

412 → |→ |→ 137941 (Unexpected negative call: P9- [14 levels above, at CT].)

413 → |→ ? E1b1a1a1f1a1-4<sup>△</sup> P116 [1/1]

414 → |→ |→ N38414

415 → |→ ? E1b1a1a1f1b L515 , L516 , L517 , M263

416 → |→ |→ E1b1a1a1f1b1 Z1893

417 → |→ E1b1a1a1f-1 CTS5961 [1/1], CTS6649 [1/1], CTS9883 [1/1], CTS10560 [1/1]

418 → |→ |→ N113455

419 → |→ E1b1a1a1g M4225/CTS229/PF6968 [9/9], U175<sup>R3</sup> [16/16]

420 → |→ E1b1a1a1g1 CTS3902 [7/7], M4226/CTS236/Z1805 [7/7], M4227/CTS897 [7/7], M4236/F3750<sup>R2</sup> [7/7], M4240/CTS4110 [7/7], M4246/CTS6620 [7/7], P277 [7/7], P278<sup>R2</sup> [14/14], U209 [7/7]

421 → |→ 11280<sup>▽</sup>, 17113<sup>▽</sup> (Duplicate call: P278 [at this level].), 39664<sup>▽</sup>, 7362<sup>▽</sup>

422 → |→ ? E1b1a1a1g1b P59

423 → |→ ? E1b1a1a1g1c M154

424 → |→ ? E1b1a1a1g1d V39

425 → |→ E1b1a1a1g1-1<sup>△</sup> M3993/CTS2504/Z1717 [5/5]

426 → |→ E1b1a1a1g1a U290 [7/7]

427 → |→ 48618<sup>▽</sup>

428 → |→ ? E1b1a1a1g1a1 U181 [2/2]

429 → |→ |→ N15560<sup>▽</sup>

430 → |→ |→ E1b1a1a1g1a1a L97 [1/1]

431 → |→ |→ 116995

432 → |→ ? E1b1a1a1g1a2 Z1725/CTS99

433 → |→ E1b1a1a1g1a-1 L649 [1/1], L650 [1/1], L651 [1/1], Z479<sup>R3</sup> [1/1]

434 → |→ |→ 200545 (Unexpected negative call: L576- [6 levels above, at E1b1a1a].)

435 → |→ E1b1a1a1g1a-2<sup>△</sup> CTS2184 [1/1], CTS4178 [1/1], Z1737/CTS7973 [1/1]

436 → |→ |→ N112889

437 → |→ E1b1a1a1g1a-3<sup>△</sup> CTS421 [1/1]

438 → |→ |→ B3241

439 → |→ E1b1a1a1g1a-4<sup>△</sup> CTS6613 [1/1]

440 → |→ |→ 94363

441 → |→ E1b1a1a1g1-1 M3850/CTS8026 [1/1], M3851/CTS8027 [1/1], M3854/CTS10652 [1/1], M3867/CTS3243/Z1781 [1/1], M3870/CTS11328/Z1789 [1/1], Z1721 [1/1]

442 → |→ |→ 139382 (Duplicate call: P278 [2 levels above, at E1b1a1a1g1].)

443 → |→ E1b1a1a1g1-2<sup>△</sup> F1574<sup>R2</sup> [1/1], L609 [1/1], P46 [1/1]

444 → |→ |→ 12291<sub>AT</sub> (Duplicate call: P278 [1 level above, at E1b1a1a1g1].)

445 → |→ E1b1a1a1g1-3<sup>△</sup> CTS9954 [1/1], M4216/CTS1974/Z1775 [1/1], M4217/CTS3661/Z1776 [1/1], M4218/CTS4015 [1/1], M4220/CTS8360 [1/1], M4221/CTS8988 [1/1]

446 → |→ |→ N113928

447 → |→ E1b1a1a1g-1 CTS6143 [2/2]

448 → |→ |→ N116748 , N28521

449 → |→ ? E1b1a1a1h P268 , P269

450 → |→ ? E1b1a1a2 Z5994

451 → |→ E1b1a1-1 PF5659<sup>R2</sup> [1/1]

452 → |→ |→ N98448<sub>FR</sub>

453 → |→ ? E1b1a2 M329

454 → |→ ? E1b1a-1<sup>△</sup> FGC7<sup>R2</sup> [1/1] (no nearby negative results), FGC8<sup>R2</sup> [1/1] (no nearby negative results), FGC9<sup>R2</sup> [1/1] (no nearby negative results)

<sup>30</sup> PAGE66 also found in nearby clade E1b1a1a1 (line 385 on page 16). One set of instances may be erroneous. Further investigation required.<sup>31</sup> PAGE66 also found in nearby clade E1b1a1a (line 384 on this page). One set of instances may be erroneous. Further investigation required.

455 ↳ 198461<sub>SA</sub>**E-M35.1**

Continued from above (line 128 on page 10)

456 E1b1b1 M35.1 [431/431], M5021/PF1532 [110/110], M5026/CTS2216/PF1629 [110/110], M5041/PF1812 [110/110], M5047/PF1830 [110/110], M5059/CTS890/PF1513 [110/110], M5069/CTS1389/PF1525 [110/110], M5074/PF1531 [110/110], M5078/PF1534 [108/110], M5085/PF1542 [110/110], M5088/PF1543 [110/110], M5100/L538/PF1556 [111/111], M5108/PF1566 [110/110], M5134/CTS2474/PF1635 [110/110], M5137/CTS2620/PF1638 [110/110], M5150/CTS3512/PF1655 [110/110], M5152/L117/PAGE15/PAGES00015/PF1657 [115/115], M5156/CTS3637/PF1659 [110/110], M5166/CTS4220 [110/110], M5174/CTS4856/PF1677 [110/110], M5178/L545/PF1679 [111/111], M5200/CTS6298/PF1701 [110/110], M5213/CTS6809/PF1716 [110/110], M5216/CTS6834/L931/PF1718 [110/110], M5226/CTS7154/PF1724 [110/110], M5241/CTS7980/PF1735 [110/110], M5247/CTS8131/PF1740 [110/110], M5258/CTS8945/PF1759 [110/110], M5266/CTS9324/PF1768 [110/110], M5274/CTS10184/PF1779 [110/110], M5287/PF1793<sup>R2</sup> [110/110], M5294/L796/PF1801 [111/111], M5301/PF1813 [110/110], M5321/PF1835 [110/110], M5322/PF1836 [110/110], M5325/PF1871 [110/110], M5360/PF1909 [110/110], M5362/PF1913 [109/110], PF1454 [109/110], PF1457 [110/110], PF1466 [110/110], PF1471 [110/110], PF1492 [110/110], PF1499 [110/110], PF1575 [110/110], PF1598 [110/110], PF1619 [110/110], PF1755 [110/110], PF1778/CTS9956 [110/110]

457 → E1b1b1a<sup>32</sup> M5485/CTS6755/PF1713/CTS675/PF2104<sup>R2</sup> [65/65], PF2091/CTS58<sup>R2</sup> [65/65], PF2116/F1244<sup>R2</sup> [65/65], PF2143/CTS5697<sup>R2</sup> [64/65], PF2151/CTS7166<sup>R2</sup> [65/65], PF2155/CTS8002<sup>R3</sup> [65/65], PF2172/CTS10617<sup>R2</sup> [65/65], PF2197/CTS11082<sup>R2</sup> [65/65], PF2199/CTS11310<sup>R2</sup> [65/65], V68<sup>R2</sup> [3/3], Z1204/PF2098<sup>R2</sup> [65/65], Z1208/CTS3278/PF2133<sup>R2</sup> [65/65] (between E1b1b1a and E1b1b1a1: CTS8899<sup>R3</sup> [65/65], L539/PF2203<sup>R2</sup> [77/77], L546/PF2153<sup>R2</sup> [66/66], PF1956<sup>R2</sup> [65/65], PF2108<sup>R2</sup> [65/65], PF2114<sup>R2</sup> [65/65], PF2115<sup>R2</sup> [65/65], PF2127/CTS2270<sup>R2</sup> [65/65], PF2130/CTS2661<sup>R2</sup> [65/65], PF2154/CTS7924<sup>R2</sup> [65/65], PF2167/CTS10323<sup>R2</sup> [65/65], PF2175<sup>R2</sup> [65/65], PF2178<sup>R2</sup> [65/65], PF2182<sup>R2</sup> [63/65], PF2188<sup>R2</sup> [65/65], Z1209/CTS4208/PF2136<sup>R2</sup> [65/65], Z1211/PF2173<sup>R2</sup> [65/65], Z1214/PF2185<sup>R2</sup> [65/65])

458 ↳ E1b1b1a1<sup>33</sup> CTS5561 [65/65], L18 [4/4], L541 [67/67], L544/PF2139 [77/77], L547/PF2166 [66/66], M78/PF2186 [318/318], M5485/CTS6755/PF1713/CTS675/PF2104<sup>R2</sup> [65/65], PF2091/CTS58<sup>R2</sup> [65/65], PF2107 [65/65], PF2109 [65/65], PF2110 [65/65], PF2111<sup>R3</sup> [65/65], PF2112 [63/65], PF2113 [65/65], PF2116/F1244<sup>R2</sup> [65/65], PF2117 [65/65], PF2118 [65/65], PF2119 [63/65], PF2122 [65/65], PF2124 [65/65], PF2143/CTS5697<sup>R2</sup> [64/65], PF2147 [65/65], PF2151/CTS7166<sup>R2</sup> [65/65], PF2199/CTS11310<sup>R2</sup> [65/65], PF2202 [65/65], Z1204/PF2098<sup>R2</sup> [65/65], Z1208/CTS3278/PF2133<sup>R2</sup> [65/65]

459 → 87 non-Geno kits requiring further testing; 57904<sub>HU</sub>

460 → E1b1b1a1a Z1902/CTS10890/PF2292 [1/1]

461 → E1b1b1a1a1 Z1216/V12 [25/25] (between E1b1b1a1a1 and E1b1b1a1a1-1: CTS1833 [6/6], CTS7017 [6/6], CTS7136 [6/6], CTS9007 [6/6], CTS12019 [6/6], Z1219/CTS3073 [6/6], Z1220/CTS3578 [6/6], Z1223/CTS5254 [6/6], Z1224/CTS5412 [6/6])

462 → 12072<sub>RU</sub>, 24694<sub>▼</sub>, 253799<sub>KW</sub>, 26832<sub>IL</sub>, 30634<sub>▼</sub>, 34322<sub>ES</sub>, 38059<sub>SY</sub>, 45555<sub>RU</sub>, 51660<sub>ES</sub>, 56764<sub>GB</sub>, 60037<sub>IT</sub>, 61958<sub>RU</sub>, 63753<sub>▼</sub>, N13879<sub>GB-E</sub>

463 → ? E1b1b1a1a1a M224

464 → ? E1b1b1a1a1b V32 [6/6]

465 ↳ 117376<sub>EG</sub>, 232189<sub>PS</sub>, 295161<sub>SO</sub>, M5062<sub>SA</sub>, N14436, N46664<sub>SO</sub>

466 → E1b1b1a1a1-1 CTS693 [5/5]

467 → E1b1b1a1a1-1-1 CTS3346 [4/4], CTS3553<sup>R2</sup> [4/4], CTS4005 [4/4], CTS6244 [4/4], CTS6667 [4/4], CTS8415 [4/4], F3599<sup>R2</sup> [4/4]

468 → 52277

469 → E1b1b1a1a1-1-1-1 F2238 [2/2]

470 → E1b1b1a1a1-1-1-1-1 PF4341<sup>R5</sup> [1/1]

471 → N9771

472 → E1b1b1a1a1-1-1-1-2 L1272/CTS661<sup>R2</sup> [1/1]

473 → N80041<sub>IE</sub>

474 → E1b1b1a1a1-1-1-2 F4010<sup>R3</sup> [1/1]

475 → M7175<sub>AE</sub>

476 → E1b1b1a1a1-1-2 CTS10132 [1/1], CTS12031 [1/1], F3779<sup>R2</sup> [1/1]

477 → N115813

478 → E1b1b1a1a2 CTS7589 [1/1], CTS10414 [1/1], L67/PF2267 [1/1], PF2159 [1/1], PF2253 [1/1], PF2254<sup>R2</sup> [1/1], PF2255 [1/1], PF2257 [1/1], PF2258 [1/1], PF2259 [1/1], PF2262 [1/1], PF2263 [1/1], PF2264/CTS5168 [1/1], PF2272/V65 [6/6], PF2274 [1/1], PF2286 [1/1], PF2287 [1/1], PF2290 [1/1], PF2293 [1/1], PF2295/CTS11387 [1/1], Z1235/CTS6672/PF2145 [1/1], Z1237/PF2276 [1/1], Z1238/CTS8686/PF2277 [1/1], Z1239/CTS9060/PF2278 [1/1], Z1240/CTS9879/PF2281 [1/1], Z1243/CTS11582 [1/1]

479 → 51746<sub>LY</sub>, E2530<sub>▼</sub>, N112481<sub>▼</sub>, N19276<sub>DE</sub>, N30296<sub>▼</sub>

480 → ? E1b1b1a1a2-1 L69/S163/PF2681<sup>R7</sup> [1/1] (no nearby negative results), M5387/L337/PF1509 [1/1] (no nearby negative results)

481 → 172234<sub>TN</sub>

482 → E1b1b1a1b Z1919/CTS4231/PF2137 [2/2], Z1920/CTS4235/PF2228 [3/3]

483 → E1b1b1a1b1 L618<sup>R3</sup> [59/59] (between E1b1b1a1b1 and E1b1b1a1b1a-1-1: CTS1773 [51/51], PF2121 [51/51], PF2126/CTS1975 [51/51], PF2215 [51/51], PF2225/CTS3287 [51/51], PF2232/CTS5527 [51/51], PF2239/CTS7273 [51/51], PF2246<sup>R2</sup> [51/51], PF2249/CTS10912 [51/51], Z1047/PF2219 [51/51], Z1052/CTS5291/PF2230 [51/51], Z1061/CTS11953 [51/51])

484 → 202724<sub>FR</sub>, 220004<sub>LV</sub>, N15407<sub>DK</sub>

485 → E1b1b1a1b1a L142<sup>R2</sup> [31/31], L542/PF2220 [64/64], PF2210/V36 [149/149], PF2211/V13 [167/168] (between E1b1b1a1b1a and E1b1b1a1b1a-1-1: CTS1273 [50/50], CTS6472 [50/50], CTS8061 [50/50], PAGE102/PAGES00102 [52/52], PF2213 [50/50], PF2214 [50/50], PF2231/CTS5371 [50/50], PF2234/CTS5856 [50/50], PF2244/CTS9761 [50/50], Z1049/CTS2374 [50/50], Z1053/CTS5935/PF2235 [50/50]) (Cannot resolve: L992 [9/9] (no nearby negative results), L1020 [2/9] (between E1b1b1a1b1a and E1b1b1a1b1a-1-10), L1024/CTS3726/PF2226 [4/4])

486 → 109 non-Geno kits requiring further testing; N113244<sub>▼</sub>

487 → ? E1b1b1a1b1a1 V27

488 → ? E1b1b1a1b1a2 P65<sup>R2</sup>

489 → ? E1b1b1a1b1a5 M35.2

490 → ? E1b1b1a1b1a7 L250<sup>R2</sup>, L251<sup>R2</sup>, L252

491 → ? E1b1b1a1b1a8 L540 [1/1]

492 → N45041<sub>DE</sub>

493 → E1b1b1a1b1a-1△ Z1046/PF2217 [47/49]

494 → 208098<sub>IT</sub>, N45267<sub>UA</sub>

495 → E1b1b1a1b1a-1-1 Z1059/PF2248 [46/47] (Cannot resolve: CTS9320 [16/47], Z1896 [5/5] (between E1b1b1a1b1 and E1b1b1a1b1a) )

496 → 12583<sub>GB-W</sub>, 138702<sub>GB-E</sub>, 167532<sub>BG</sub>, 169748<sub>SE</sub>, 17034, 201114<sub>IT</sub>, 210744<sub>▼</sub>, 249674<sub>▼</sub>, 250067<sub>▼</sub>, 257611<sub>US</sub>, 94142<sub>CH</sub>, B1790<sub>GB-W</sub>, B6559<sub>▼</sub>, N101045<sub>GB-W</sub>, N111594<sub>▼</sub>, N116412<sub>▼</sub>, N116681<sub>▼</sub>, N117110<sub>▼</sub>, N16800<sub>PL</sub>, N19135<sub>FI</sub>, N3913<sub>PL</sub>, N4025<sub>RU</sub> (Duplicate call: PF2248 [at this level]. Suspected no-call for PF2248.)

497 → E1b1b1a1b1a3 L17 [4/4]

498 → 109889<sub>DE</sub>, 167154<sub>UA</sub>, 40329<sub>PT</sub>, N49571<sub>GB</sub>

<sup>32</sup> M5485, PF2091, PF2116, PF2143, PF2151, PF2155, PF2172, PF2197, PF2199, Z1204 and Z1208 also found in nearby clade E1b1b1a1 (line 458 on this page). L539 also found in nearby clade E1b1b1b2a-2 (line 606 on page 19). One set of instances may be erroneous. Further investigation required.

<sup>33</sup> M5485, PF2091, PF2116, PF2143, PF2151, PF2155, PF2172, PF2197, PF2199, Z1204 and Z1208 also found in nearby clade E1b1b1a (line 457 on this page). One set of instances may be erroneous. Further investigation required.

/version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.

499 → E1b1b1a1b1a4 L143/DYS643-NULL [2/2]  
 500 ↘ 22762<sub>GB-E</sub>, 259807<sub>GB-E</sub>  
 501 → E1b1b1a1b1a6 L241 [4/4]  
 502 ↘ 39430<sub>GB</sub>, 7263<sub>CZ</sub>, N113872 (Duplicate call: PF2217 [2 levels above, at E1b1b1a1b1a-1]. Suspected no-call for PF2217.), N49450<sub>GB-E</sub>  
 503 → E1b1b1a1b1a-1-1-1<sup>△</sup> U175<sup>R<sub>3</sub></sup> [1/1]  
 504 ↘ N80425  
 505 → E1b1b1a1b1a-1-1-10<sup>△</sup> L1019 [2/2]  
 506 ↘ 109163<sub>GB</sub>, 89943<sub>GB-E</sub> (Duplicate call: Z1896. Presumed Z1896+.)  
 507 → E1b1b1a1b1a-1-1-2<sup>△</sup> PF7506<sup>R<sub>2</sub></sup> [1/1]  
 508 ↘ N9122<sub>IT</sub>  
 509 → E1b1b1a1b1a-1-1-3<sup>△</sup> M2112/CTS10889/Z1977<sup>R<sub>2</sub></sup> [1/1]  
 510 ↘ N11517<sub>IT</sub>  
 511 → E1b1b1a1b1a-1-1-4<sup>△</sup> Z2835/L759/YSC0000295<sup>R<sub>2</sub></sup> [1/1]  
 512 ↘ N45310  
 513 → E1b1b1a1b1a-1-1-5<sup>△</sup> CTS8749<sup>R<sub>14</sub></sup> [1/1]  
 514 ↘ N117474  
 515 → E1b1b1a1b1a-1-1-6<sup>△</sup> CTS1489<sup>R<sub>5</sub></sup> [1/1]  
 516 ↘ 152763<sub>IT</sub>  
 517 → E1b1b1a1b1a-1-1-7<sup>△</sup> CTS11991<sup>R<sub>3</sub></sup> [1/1] (no nearby negative results), M5368/PF1921 [1/1], M5569/PF1919 [1/1], M5572/PF1923 [1/1], PF1587 [1/1] (no nearby negative results), PF1917 [1/1], PF1924 [1/1], PF6009<sup>R<sub>3</sub></sup> [1/1] (no nearby negative results)  
 518 ↘ 186136<sub>ES</sub>  
 519 → E1b1b1a1b1a-1-1-8<sup>△</sup> CTS11286<sup>R<sub>2</sub></sup> [1/1]  
 520 ↘ 295091<sub>DE</sub>  
 521 → E1b1b1a1b1a-1-1-9<sup>△</sup> Z867/CTS5663/PF2142 [1/1] (no nearby negative results)  
 522 ↘ 211910<sub>IE</sub>  
 523 ?→ E1b1b1a1b1a-2 Z1896 [2/2] (between E1b1b1a1b1 and E1b1b1a1b1a)  
 524 ↘ 225029<sub>BE</sub>, 4503<sub>DE</sub>  
 525 → E1b1b1a1b2 CTS2548 [7/7], CTS2817 [7/7], CTS5479 [7/7], CTS6434 [7/7], CTS8892 [7/7], L677/CTS9547 [12/12], V22 [34/34]  
 526 ↘ 130655<sub>IT</sub>, 31320<sub>GB</sub>, 32460<sub>CH</sub>, 38122<sub>CH</sub>, 40797<sub>PT</sub>, 45231<sub>PT</sub>, 45617<sub>NL</sub>, 48104<sub>GB-E</sub>, 48842<sub>PT</sub>, 52849<sub>PT</sub>, 54449<sub>PT</sub>, 58684<sub>PT</sub>, 6082<sub>GB-E</sub>, 61897<sub>UA</sub>, 68731<sub>DE</sub>, 70198<sub>GB-E</sub>, 7765<sub>IT</sub>, 82419<sub>LV</sub>, N105559<sub>IT</sub>, N18123<sub>GB-E</sub>, N21917<sub>GR</sub>, N23469<sub>CZ</sub>, N27248<sub>ES</sub>, N29952<sub>DE</sub>, N33344<sub>BY</sub>, N37624<sub>HU</sub>, N48458<sub>ES</sub>, N5894<sub>ES</sub>, N73767<sub>JO</sub>, N88713<sub>ET</sub>  
 527 ?→ E1b1b1a1b2a M148  
 528 ?→ E1b1b1a1b2b V19  
 529 ?→ E1b1b1a1b2c L674, L675  
 530 → E1b1b1a1b2-1 CTS6080 [3/3], L1250/CTS11457 [3/3]  
 531 ↘ 256785<sub>ES</sub>, N46362<sub>CZ</sub>  
 532 → E1b1b1a1b2-1-1 CTS11742<sup>R<sub>2</sub></sup> [1/1], P36<sup>R<sub>9</sub></sup> [1/1]  
 533 ↘ 299588  
 534 → E1b1b1a1b2-2 CTS11145<sup>R<sub>2</sub></sup> [1/1]  
 535 ↘ N82940<sub>SA</sub>  
 536 ?→ E1b1b1a1c M521  
 537 → E1b1b1b Z827/CTS1243 [47/48]  
 538 → E1b1b1b1 L19/PF2345/V257 [10/10], L335/PF2300 [25/25], M310/PF2402 [22/22], M5042/PF2395 [16/16], M5050/PF2410 [16/16], M5061/CTS1042/Z1160 [16/16], M5066/CTS1303/PF2314 [16/16], M5070/CTS1412/PF2315 [16/16], M5077/PF2319/Z1162 [16/16], M5091/PF2321/Z1164 [16/16], M5096/PF2322/Z1166 [16/16], M5130/PF2343 [16/16], M5133/CTS2473/PF2344 [16/16], M5140/CTS2885/PF2346 [16/16], M5145/CTS3305/PF2347 [16/16], M5184/CTS5558/PF2361/Z1183 [16/16], M5186/CTS5604/PF2362 [16/16], M5201/PF2364<sup>R<sub>2</sub></sup> [16/16], M5205/CTS6444/PF2365 [16/16], M5209/CTS6754/PF2368/Z1187 [16/16], M5220/CTS6911/PF2372 [16/16], M5222/CTS6956 [16/16], M5227/PF2375 [16/16], M5236/CTS7795/PF2378 [16/16], M5237/CTS7796/PF2379/Z1193 [16/16], M5256/CTS8649/PF2381<sup>R<sub>2</sub></sup> [16/16], M5272/PF2387 [16/16], M5298/PF2394 [16/16], M5310/PF2396 [16/16], M5317/PF2398 [16/16], M5356/CTS11964/PF2408 [16/16], M5363/PF2411 [16/16], M5366/PF2413 [16/16], PF2307 [16/16], PF2318/CTS1483 [16/16], PF2324 [15/16], PF2355 [16/16], PF2405/CTS11687 [16/16], Z1170/PF2333 [16/16], Z1196/PF2382 [16/16], Z1197/PF2383 [16/16] (Cannot resolve: L337/M5387/PF1509 [7/7] (no nearby negative results), L342/S278 [7/7] (no nearby negative results), PF2331 [13/16] (no nearby negative results))  
 539 → 216347<sub>TD</sub>, 25764<sub>ES</sub>, 56716<sub>DE</sub>, E4027<sub>DZ</sub>  
 540 → E1b1b1b1a M81/PF2554 [50/50] (between E1b1b1b1a and E1b1b1b1a2: CTS3415 [12/12], M5008/PF2498 [12/12], M5019/CTS1294/PF2483/Z1161 [12/12], M5040/CTS10321/PF2570 [12/12], M5054/CTS87/PF2472 [12/12], M5075/PF2485 [12/12], M5080/PF2486 [12/12], M5093/PF2489/Z1165 [12/12], M5095/PF2490 [12/12], M5097/PF2491 [12/12], M5099/PF2493 [12/12], M5106/PF2497 [12/12], M5109/PF2499/Z1169 [12/12], M5110/PF2500 [12/12], M5114/PF2501 [12/12], M5121/CTS1819/PF2504/Z1172 [12/12], M5146/CTS3350/PF2510 [12/12], M5191/CTS5819/PF2520/Z1184 [12/12], M5193/CTS5883/PF2363 [12/12], M5225/CTS7132/PF2531 [12/12], M5252/CTS8527/PF2538/Z1195 [12/12], M5275/CTS10196/PF2544 [12/12], M5281/PF2545 [12/12], M5286/PF2547 [12/12], M5291/PF2548 [12/12], M5307/PF2551 [12/12], M5311/PF2553 [12/12], M5324/PF2401/Z1201 [12/12], M5329/CTS11147/PF2560 [12/12], PF1453 [12/12], PF2301 [12/12], PF2305 [12/12], PF2306 [12/12], PF2311 [12/12], PF2326 [12/12], PF2475 [12/12], PF2476 [12/12], PF2478 [12/12], PF2494 [12/12], Z1158/PF2310 [12/12], Z1177/CTS3870/PF2513 [12/12])  
 541 ?→ E1b1b1b1a1 M107  
 542 → E1b1b1b1a2 M183/PAGE33/PAGES00033/PAGE033 [56/56] (Cannot resolve: PF1585 [11/12], PF2477/Z1156 [11/12], PF2546/M5284 [11/12], PF2552/M5308 [11/12], Z826 [3/3])  
 543 → 43 non-Geno kits requiring further testing; N117857  
 544 ?→ E1b1b1b1a2a M165  
 545 → E1b1b1b1a2-1<sup>△</sup> M5172/PF2515 [10/10], PF2557<sup>R<sub>2</sub></sup> [10/10]  
 546 → 265952<sub>GB-E</sub>, 276623<sub>ES</sub>, N113620<sub>ES</sub>, N114165<sub>ES</sub>, N116733<sub>ES</sub>, N2591<sub>IT</sub>  
 547 → E1b1b1b1a2-1-1<sup>△</sup> PF7272 [1/1]  
 548 ↘ 100222<sub>DZ</sub>  
 549 → E1b1b1b1a2-1-2<sup>△</sup> CTS1411<sup>R<sub>3</sub></sup> [2/2]  
 550 ↘ N114409<sub>ES</sub>, N8573<sub>ES</sub>  
 551 → E1b1b1b1a2-1-3 L351 [1/1], M5695/PF1417/V41 [1/1] (no nearby negative results)  
 552 ↘ 170330  
 553 → E1b1b1b1a2-2<sup>△</sup> CTS1411<sup>R<sub>3</sub></sup> [1/1], CTS8749<sup>R<sub>14</sub></sup> [1/1], P36<sup>R<sub>9</sub></sup> [1/1]  
 554 → E17721  
 555 ?→ E1b1b1b1a2-3 M5167/CTS4236/PF2514/Z1179 [1/1] (no nearby negative results)  
 556 ↘ 105717<sub>ES</sub>  
 557 → E1b1b1b1-1 PF2436 [4/4], PF2455 [4/4], PF2466 [4/4], PF2469 [4/4], PF2470 [4/4], PF3985<sup>R<sub>3</sub></sup> [4/4]  
 558 → 160275<sub>GB-E</sub>

<sup>34</sup> CTS1411 also found in nearby clade E1b1b1b1a2-2 (line 553 on this page). One set of instances may be erroneous. Further investigation required.

<sup>35</sup> CTS1411 also found in nearby clade E1b1b1b1a2-2 (line 333 on this page). One set of instances may be erroneous. Further investigation required.

<sup>36</sup> CTS8749 also found in nearby clade E1b1b1b2-1-1 (line 615 on page 19). CTS1411 also found in nearby clade E1b1b1b1a2-1-2 (line 549 on this page). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.<sup>36</sup> PF6754 also found in nearby clade E1b1b1b2a1d (line 590 on this page). One set of instances may be erroneous. Further investigation required.<sup>37</sup> PF6754 also found in nearby clade E1b1b1b2a1-1 (line 589 on this page). One set of instances may be erroneous. Further investigation required.<sup>38</sup> L539 also found in nearby clade E1b1b1b1a (line 457 on page 17). One set of instances may be erroneous. Further investigation required.<sup>39</sup> CTS8749 also found in nearby clade E1b1b1b2a2-2 (line 553 on page 18). One set of instances may be erroneous. Further investigation required.

619 ↗? E1b1b1c V6  
 620 ↗? E1b1b1d V92

C

Continued from above (line 141 on page 10)

621 C CTS1083 [22/22], CTS2267 [22/22], CTS2377 [22/22], CTS3221<sup>R2</sup> [22/22], CTS3910 [22/22], CTS4032 [22/22], CTS6266 [22/22], CTS8148 [22/22], CTS10116 [22/22],  
 CTS11544 [22/22], CTS11820 [22/22], F917 [22/22], F767<sup>R2</sup> [22/22], F847 [22/22], F909 [22/22], F1044 [22/22], F1208 [22/22], F1217 [22/22], F1241 [22/22], F1288 [22/22],  
 F1307 [22/22], F1367 [22/22], F1490 [22/22], F3698 [22/22], F1727 [22/22], F1871 [22/22], F1911 [22/22], F2067 [22/22], F2253 [22/22], F2258 [22/22], F2305 [22/22],  
 F2446 [22/22], F2449 [22/22], F2485 [22/22], F2501 [22/22], F2606 [22/22], F2607 [22/22], F3712 [22/22], F2678 [22/22], F2774 [22/22], F2792<sup>R2</sup> [22/22], F2803 [22/22],  
 F2858 [22/22], F2888 [22/22], F2897 [22/22], F2909 [22/22], F2969 [22/22], F3043 [22/22], F3319 [22/22], F3719 [22/22], F3388 [22/22], F3395 [22/22], F3400 [22/22],  
 F3462<sup>R2</sup> [22/22], F3537 [22/22], IMS-JST029149, IMS-JST037816-80, M130/PAGE51/RPS4Y711/PAGES00051/RPS4Y [28/28], M216 [27/28], P184 [22/22], P255/P325 [22/22], P260/P324 [22/22], V77 [23/23], V183/F1743 [23/23], V199 [23/23], V232/F1029 [23/23] (Cannot resolve: F2847 [21/22])

622 → 198205 ▽, 57671 ▽

623 → C1<sup>40</sup> F1030 [6/6], F1118 [6/6], F3670<sup>R2</sup> [6/6], Z1426/F3393 [7/7]

624 → C1a CTS11043 [4/4]

625 → C1a1 CTS219 [1/1], CTS231 [1/1], CTS483 [1/1], CTS667 [1/1], CTS1186 [1/1], CTS1208 [1/1], CTS1994 [1/1], CTS2278 [1/1], CTS2609<sup>R2</sup> [1/1], CTS3357 [1/1],  
 CTS3370 [1/1], CTS3487 [1/1], CTS3825 [1/1], CTS4198 [1/1], CTS4324 [1/1], CTS4866 [1/1], CTS5942 [1/1], CTS5984 [1/1], CTS6670 [1/1], CTS7285 [1/1],  
 CTS8339 [1/1], CTS8419 [1/1], CTS8781 [1/1], CTS9122 [1/1], CTS9291 [1/1], CTS9351 [1/1], IMS-JST037816, M8 [1/1], M105 [1/1], M131 [0/1], M240 [1/1], P122 [0/1],  
 PF693/CTS3368<sup>R2</sup> [1/1], Z1388/CTS2413 [1/1], Z1392/CTS4318 [1/1], Z1394/CTS5312 [1/1], Z1396/CTS5794 [1/1], Z1398/CTS6149 [1/1], Z1412/CTS10312 [1/1],  
 Z1425/CTS11072 [1/1], Z1428/CTS11382 [1/1], Z1429/CTS11581 [1/1], Z1430/CTS11893 [1/1]

626 → 247213 (Unexpected negative calls: P122- [at this level], M131- [at this level].)

627 ↗? C1a1a P121

628 → C1a1a1 CTS6678, CTS10729, CTS11058, Z7054, Z7174, Z7180, Z7190, Z7196, Z7643, Z7650, Z7842, Z7968, Z7985, Z7986, Z7988, Z7989, Z7991

629 → C1a1a2 Z1356, Z1357/CTS7128, Z4160, Z6520/Z7231, Z7156, Z7159, Z7162, Z7228, Z7232, Z7234, Z7856, Z7869, Z7870, Z7898, Z7899, Z7900, Z7901, Z7902, Z7903,  
 Z7904, Z8952/Z7237

630 → C1a2<sup>41</sup> CTS11798 [3/3], F993 [3/3], P53<sup>R6</sup> [3/3], V20 [6/6], V71, V86 [0/3], V182, V184, V219 [0/3]

631 → 86042 ▽

632 → C1a2a V222 [3/3]

633 ↗ 164416<sub>GB-S</sub>, 171250<sub>UA</sub>, N113953

634 → C1a2-1<sup>△</sup> F2671 [1/1]

635 → N113974<sub>IE</sub>

636 → C1a2-2 K29 [1/1] (no nearby negative results)

637 → N66830

638 → C1-1 F1370<sup>R2</sup> [3/3]

639 → C1-1-1<sup>△</sup> M5532/F3195/PF1806<sup>R4</sup> [1/1], PF3806<sup>R2</sup> [1/1], PF7506<sup>R2</sup> [1/1]

640 → 178065

641 → C1-1-2

642 → C1b F1370<sup>R2</sup> [2/2], M356 [3/4]

643 → 197535<sub>IQ</sub> ▽ (Unexpected negative call: M356- [at this level].), N16907<sub>IN</sub> ▽, N33666<sub>IN</sub> ▽

644 → C1b1 F930/K105, K43, K59, K61, K69, K78, K83, K88, K90, K94, K108, K129, K134, K141, K146, K147, K156, K161, K162, K181, K184, K187, K188, K205, K245 [1/1],  
 K246, K249, K252, K260, K261, K267, K280, K293, K310, K317, K319, K320, K323, K358, K377, K396, K398, K401, K402, K414, K415, K417, K426, K427, K435, K99, P92 [1/1], Z12426, Z12427, Z12428, Z12429, Z12430, Z12431, Z12432, Z12434, Z12435, Z12436, Z12437, Z12438, Z12441, Z12442, Z12443, Z12444, Z12445, Z12446, Z12447, Z12448, Z12449, Z12450, Z12451, Z12452, Z12455, Z12456, Z12457, Z12458, Z12459, Z12460, Z12461, Z12462, Z12463, Z12464, Z12465, Z12466, Z12469, Z12470, Z12471, Z12472, Z12473, Z12474, Z12475, Z12476, Z12477, Z12478, Z12479

645 → N80654 ▽

646 → C1b1a K40, K41, K56, K70, K74, K79, K102, K104, K113, K119, K136, K138, K153, K159, K175, K191, K195, K196, K197, K198, K223, K231, K234, K258, K274, K277, K296, K297, K303, K308, K309, K324, K332, K333, K341, K361, K382, K395, K399, K400, K406, K407, K412, K429, K434, Z5895, Z12482, Z12483, Z12484, Z12485, Z12486, Z12487, Z12488, Z12489, Z12491, Z12492, Z12493, Z12494, Z12495, Z12496

647 → C1b1a1 K96, K107, K131, K163, K233, K272, K283, K425, Z12480, Z12481, Z12497, Z12498, Z12499, Z12500, Z12502, Z12503

648 → C1b1a1a K42, K44, K60, K68, K77, K86, K101, K117, K118, K135, K140, K143, K209, K227, K235, K236, K244, K276, K300, K316, K338, K362, Z12504, Z12505, Z12506, Z12507, Z12508, Z12509, Z12510, Z12511, Z12512, Z12513/K418, Z12514

649 → C1b1a1a1 K92, K225, K428, Z12515, Z12516, Z12517, Z12518, Z12519, Z12520

650 → C1b1a1a1a K193, Z12521

651 → C1b1a1a1a1 Z12522

652 → C1b1a1a1a1a K466, K468, Z12527, Z12528

653 → C1b1a1a1a1a1 K469, K470, Z12530

654 → C1b1a1a1a1a1a Z5898

655 → C1b2 12377, Z5900, Z12318, Z12319, Z12320, Z12321, Z12322, Z12323, Z12324, Z12325, Z12326, Z12327, Z12328, Z12329, Z12330, Z12331, Z12332, Z12333, Z12337, Z12338, Z12339, Z12340, Z12341, Z12342, Z12343, Z12344, Z12345, Z12346, Z12347, Z12348, Z12352, Z12353, Z12354, Z12355, Z12356, Z12357, Z12358, Z12359, Z12360, Z12361, Z12362, Z12363, Z12367, Z12368, Z12369, Z12370, Z12371, Z12372, Z12373, Z12374, Z12375, Z12376, Z12378, Z12382, Z12383, Z12384, Z12385, Z12386, Z12387, Z12388, Z12389, Z12390, Z12391, Z12392, Z12393, Z12397, Z12398, Z12399, Z12400, Z12401, Z12402, Z12403, Z12404, Z12405, Z12406, Z12407, Z12408, Z12412, Z12413, Z12414, Z12415, Z12416, Z12417, Z12418, Z12419, Z12420, Z12421, Z12422, Z12423

656 → C2 M38

657 → C2a M208

658 → C2a1 P33

659 → C2a2 P54

660 → C3 CTS93 [16/16], CTS244 [16/16], CTS1831 [16/16], CTS3430 [16/16], CTS5410 [16/16], CTS6723 [16/16], CTS6865 [16/16], CTS7355 [16/16], CTS12051 [16/16], F734 [16/16], F2847 [16/16], F3952<sup>R2</sup> [16/16], F791 [16/16], F882 [16/16], F894 [16/16], F1090 [16/16], F1140 [16/16], F1245 [16/16], F1574<sup>R2</sup> [16/16], F1597 [16/16], F1646 [16/16], F1688 [16/16], F1963 [16/16], F1996 [15/16], F3702 [16/16], F2166 [16/16], F2379 [16/16], F2632 [16/16], F2649 [16/16], F2664 [16/16], F2695 [16/16], F2718 [16/16], F2951 [16/16], F3068 [16/16], F3122 [16/16], F3174 [16/16], F4010<sup>R3</sup> [16/16], F3324 [16/16], F3333 [16/16], M217 [17/17], P44 [17/18], Z1436/F3862 [16/16], Z1452/F2670 [16/16], Z1453/CTS9677 [6/6], Z1457/F3718 [16/16], Z1460/F3553 [16/16] (Cannot resolve: F936 [14/16], F1622 [14/16], F3411/Z1458 [14/16], F3565 [6/16], F3581 [14/16], F3695 [14/16], F3787 [7/16], F3831 [8/16], F3847 [8/16], F4015 [4/16])

661 → 207435 ▽, N94854 ▽

662 → C3a M93

663 → C3b F1396 [9/9], F1699 [9/9], F1788 [9/9], F1906 [9/9], F2386 [9/9], F2661 [9/9], F3348 [9/9], F3447 [9/9], F3738 [9/9], F3752 [9/9], F3769 [9/9], F3776 [9/9], F3783 [9/9], F3851 [9/9], F3904 [9/9], F3914 [9/9], F3923 [9/9], F3927 [9/9], F3929 [9/9], F3950 [9/9], F3951 [9/9], F3954 [9/9], F3972 [9/9], F3977 [9/9], F3980 [9/9], F3981 [9/9], F3982 [9/9], F3986 [9/9], F4003 [9/9], F4012 [9/9], F4032 [9/9], F4035 [9/9], L1373 [6/6]

<sup>40</sup> F1030 and F1118 may have a wider scope than this subclade.<sup>41</sup> P53 also found in nearby clade C3c (line 687 on page 21). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.

<sup>42</sup> F4039 and F4042 also found in nearby clade C3b-1-2 (line 681 on page 21). M48 also found in nearby clade C3b-1-2-1 (line 683 on page 21). One set of instances may be erroneous. Further investigation required.

<sup>43</sup> M86 also found in nearby clade C3b-1-2-1 (line 683 on this page). One set of instances may be erroneous. Further investigation required.

<sup>44</sup> F4039 and F4042 also found in nearby clade C3b-1-2 (line 681 on this page). One set of instances may be erroneous. Further investigation required.

<sup>45</sup> P53 also found in nearby clade C3c (line 687 on this page). F4039 and F4042 also found in nearby clade C3b2 (line 664 on this page). F4039 and F4042 also found in nearby clade C3b1 (line 669 on this page). One set of instances may be erroneous. Further investigation required.

<sup>46</sup> M48 also found in nearby clade C3b2 (line 664 on this page). M86 also found in nearby clade C3b2a (line 666 on this page). One set of instances may be erroneous. Further investigation required.

<sup>47</sup> P53 also found in nearby clade C1a2 (line 630 on page 20). P53 also found in nearby clade C3b-1-2 (line 681 on this page). One set of instances may be erroneous. Further investigation required.

<sup>48</sup> Z1306, Z1310, Z1314, Z1316, Z1318, Z1320, Z1323, Z1326, Z1330, Z1332, Z1333, Z1335, Z1339, Z1341, Z1343, Z1345, Z1347, Z1349, Z1351 and Z1352 also found in nearby clade C3e (line 691 on this page). One set of instances may be erroneous. Further investigation required.

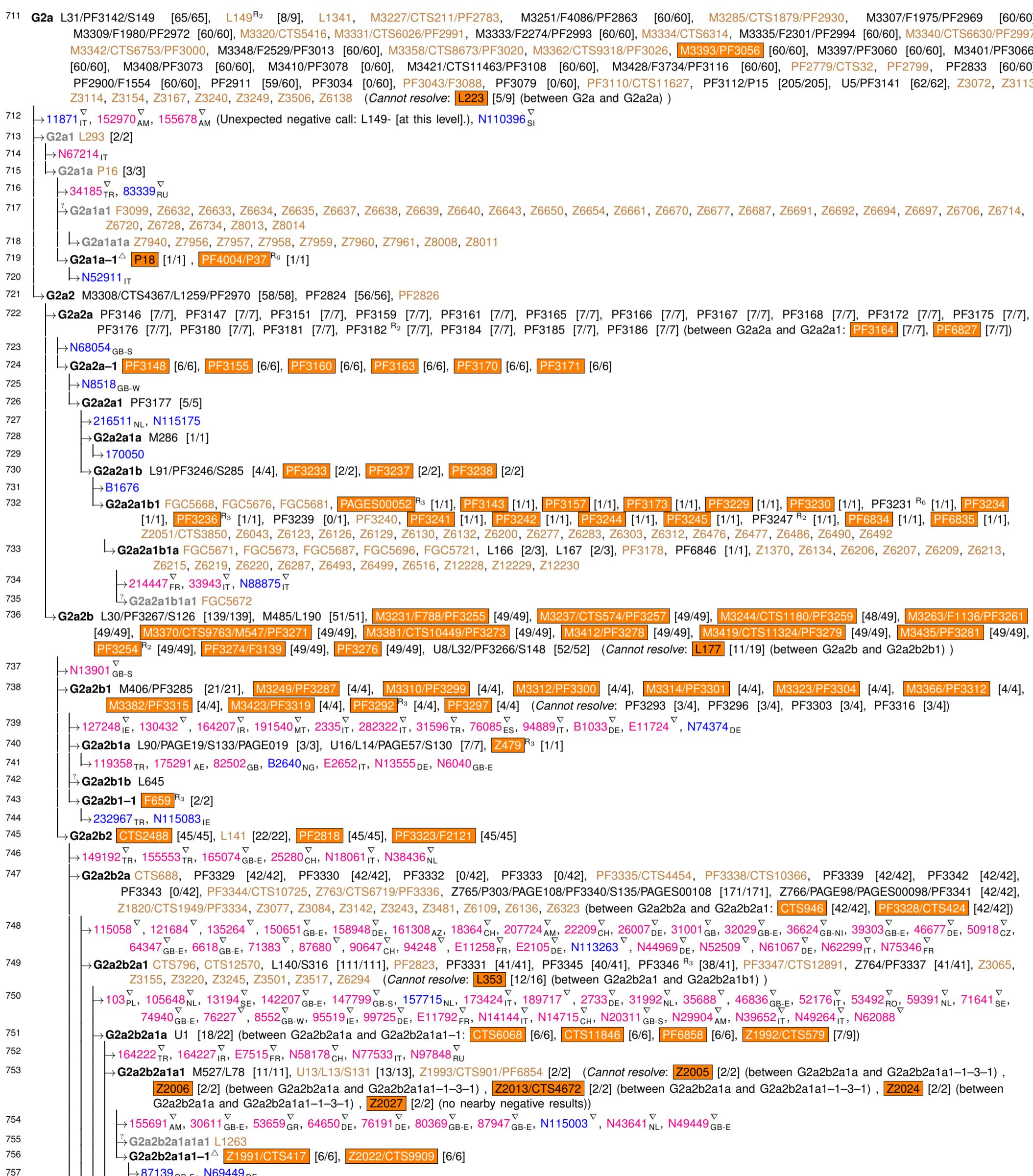
F936, F3581, Z1445 and Z1458 may have a wider scope than this subclade.

<sup>49</sup> Z1306, Z1310, Z1314, Z1316, Z1318, Z1320, Z1323, Z1326, Z1330, Z1332, Z1333, Z1335, Z1339, Z1341, Z1343, Z1345, Z1347, Z1349, Z1351 and Z1352 also found in nearby clade C3-1 (line 690 on this page). One set of instances may be erroneous. Further investigation required.

<sup>50</sup> F1012 and F1564 may have a wider scope than this subclade.

**G2a**

Continued from above (line 179 on page 11)



Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.<sup>51</sup> Z738 also found in nearby clade G2a2b2a1c1a (line 805 on this page). One set of instances may be erroneous. Further investigation required.<sup>52</sup> Z726 also found in nearby clade G2a2b2a1b1a-1-2 (line 795 on this page). One set of instances may be erroneous. Further investigation required.<sup>53</sup> Z759 also found in nearby clade G2a2b2a1b1a-1 (line 786 on this page). One set of instances may be erroneous. Further investigation required.<sup>54</sup> Z759 also found in nearby clade G2a2b2a1b1a2a-2 (line 782 on this page). One set of instances may be erroneous. Further investigation required.<sup>55</sup> Z726 also found in nearby clade G2a2b2a1b1a2 (line 776 on this page). One set of instances may be erroneous. Further investigation required.<sup>56</sup> Z738 also found in nearby clade G2a2b2a1b (line 770 on this page). One set of instances may be erroneous. Further investigation required.

## I1a

Continued from above (line 212 on page 12)

```

823 I1a DF29/S438 [75/75] (Cannot resolve: L1340) [8/8] (no nearby negative results)
824 → 258047ES, 2846GB-E, 419GB, 53891NL, 61198PL, 68561▼, 72194GB-E, 73587GB-E, 83055GB-E, 83351GB, 84970GB-S, B3251GB-S, N96394GB-S
825 → I1a1 Z2336/CTS6364 [21/21]
826 → 276502SE, N53069PL, N66746FI
827 ?→ I1a1a M227 [7/7]
828 → 41100, 52421, 63123DE, 66585CH, 79006FR, N40284GB-E
829 → I1a1a1 M72 [1/1]
830 → 47031UA
831 → I1a1b L22/S142 [150/153]
832 → 38 non-Geno kits requiring further testing; 167572GB-E, 177962, 208774IE, 22950, 246180US, 264407, 267704, 270888GB-E, 44648, B2521SE, N112715, N113938, N114009GB, N68924FR
833 → I1a1b1 P109 [61/65] (Cannot resolve: L1438) [2/9] (no nearby negative results)
834 → 33 non-Geno kits requiring further testing; 203577▼, 219699▼, 226528IE, 230990GB-E, 244795▼, 271418FR, 310372▼, 46183GB-E, 61740▼, 95979GB-E, N114638▼, N115026▼, N115893▼, N115926▼, N117775▼, N12566NO, N18676DE, N57864LT, N86135▼
835 → I1a1b1-157 L1439R4 [9/9] (between I and I1-1)
836 → 132649▼LT (Unexpected negative call: L22- [2 levels above, at I1a1b].), 29043GB, N20789GB-S (Unexpected negative call: L22- [2 levels above, at I1a1b].), N43034
837 → I1a1b1-1-158 CTS9875R3 [1/1], F2711R3 [1/1]
838 → B1617IE
839 → I1a1b1-1-2△ F1583 [1/1]
840 → 4640
841 → I1a1b1-1-3 CTS10028/Z2337 [6/6] (between I1a1b1-1 and I1a1b1-1)
842 → 182946RU (Unexpected negative call: P109- [2 levels above, at I1a1b1].), 226867DK, B1358GB-E (Unexpected negative calls: P109- [2 levels above, at I1a1b1], L22- [3 levels above, at I1a1b1].), B1614GB, N35281GB-S (Unexpected negative call: P109- [2 levels above, at I1a1b1].)
843 ?→ I1a1b1-1-3-159 Z719/L813R2 [1/1] (no nearby negative results)
844 → 61365GB-E (Unexpected negative call: P109- [2 levels above, at I1a1b1].)
845 → I1a1b1-260 CTS9875R3 [1/1], F2711R3 [1/1], L1493 [1/1] (no nearby negative results)
846 → 125005GB-E (Duplicate call: L1493 [at this level]. Presumed L1493+.)
847 → I1a1b1-3△ CTS11525R3 [1/1]
848 → 45041FR
849 → I1a1b1-4△ PF879R4 [1/1]
850 → N117543
851 ?→ I1a1b2 L205/S239 [3/3]
852 → 127873NL, 37165GB-E, 57021GB
853 → I1a1b4 L300/S241 [1/1]
854 → N114256
855 → I1a1b-1 Z75/S336 [23/23]
856 → I1a1b3 Z74 [27/28]
857 → 236407SE
858 → I1a1b3-1 CTS9346 [13/13]
859 → 121200FI, 128277GB, 314329▼, N112937▼, N114070▼, N117245▼
860 → I1a1b3b61 Z719/L813R2 [7/7]
861 → 126376NO, 141601GB-S, 154335NO, 37525NO, 76769GB, N91756GB-E, N91954NL
862 → I1a1b3-1-1△ Z563R2 [1/1]
863 → 14318SE (Duplicate call: L157 [8 levels above, at I1].)
864 → I1a1b3-1-2△ L693R2 [1/1]
865 → N99251NO
866 → I1a1b3-2 CTS2208 [13/13], CTS5476 [13/13]
867 → N114436
868 → I1a1b3a L287 [26/27]
869 → N19855FI
870 → I1a1b3a1 L258/S335 [28/28]
871 → 103055FI, 112576▼FI, 122603▼FI, 176476NO, 196510▼FI, 199238RU, 220617FI, 258650FI, 273838FI, 289591▼FI, 66967▼FI, 82474▼FI, 86126FI, N100121FI, N14141FI, N22572FI, N2290FI, N35583FI, N56498FI, N66713FI
872 → I1a1b3a1a L296 [2/2]
873 → 311088, N29608FI
874 → I1a1b3a1-1 Z133 [6/6], Z721/CTS2242 [6/6]
875 → 192628FI
876 → I1a1b3a1-1-1△ Z134 [4/4]
877 → 186179FI, 233774FI, 284842SE, N29294FI
878 ?→ I1a1b3a1-1-2 Z2043 [1/1] (no nearby negative results)
879 → 102565FI
880 → I1a1b-2 Z454R7 [1/1]
881 → 252235
882 ?→ I1a1b-362 L340R7 [2/2]
883 → 176551PT, 90073GB-S
884 → I1a1-1△ F3312R2 [2/2]
885 → 174815NO, N115558NO
886 → I1a1-2 L69/S163/PF2681R7 [5/5] (No nearby negative results, but negative results downstream of I1a1b. Recurrent?)
```

<sup>57</sup> L1439 also found in nearby clade I1a3a-1 (line 987 on page 26). One set of instances may be erroneous. Further investigation required.

<sup>58</sup> CTS9875 also found in nearby clade I1a1b1-2 (line 845 on this page). One set of instances may be erroneous. Further investigation required.

<sup>59</sup> Z719 also found in nearby clade I1a1b3b (line 860 on this page). One set of instances may be erroneous. Further investigation required.

<sup>60</sup> CTS9875 also found in nearby clade I1a1b1-1-1 (line 837 on this page). One set of instances may be erroneous. Further investigation required.

<sup>61</sup> Z719 also found in nearby clade I1a1b1-1-3-1 (line 843 on this page). One set of instances may be erroneous. Further investigation required.

<sup>62</sup> L340 also found in nearby clade I1a2b-3 (line 979 on page 26). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.<sup>63</sup> L340 and L343 also found in nearby clade I1a2a1a2-6 (line 935 on this page). One set of instances may be erroneous. Further investigation required.<sup>64</sup> L340 and L343 also found in nearby clade I1a2a1a1a-2 (line 921 on this page). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.

958 | | | | ↳ 121192<sub>FI</sub>, 154151<sub>FI</sub> (Unexpected negative call: M91- [999 levels above, at BT].), 181820<sub>SE</sub>, 186200<sub>RU</sub>, 192971<sub>FI</sub>, 197789<sub>NO</sub>, 211404<sub>SE</sub>, 252396<sub>NO</sub>, 290147<sub>RU</sub>,  
959 | | | | B3400<sub>NO</sub> (Duplicate call: CTS9352 [999 levels above, at I1a2a1-1-1]. Suspected no-call for CTS9352.), N15620<sub>NO</sub>, N38671<sub>SE</sub>, N42696<sub>SE</sub>, N56200<sub>NO</sub>  
960 | | | | ↳ I1a2a1c L573 [6/6]  
961 | | | | ↳ 170291<sub>DE</sub>, 225773<sub>DE</sub>, 236837<sub>DE</sub>, 256129<sub>NL</sub>, 34733<sub>DE</sub>, N117542  
962 | | | | ↳ N35383<sub>NO</sub>  
963 | | | | ↳ I1a2a1-2 L247/S293<sup>R6</sup> [1/1]  
964 | | | | ↳ B3499<sub>PL</sub>  
965 | | | | ↳ I1a2a-1-1 F3916 [2/2]  
966 | | | | ↳ 285716, N114305  
967 | | | | ↳ I1a2a-2 △ M10012/PF856<sup>R3</sup> [1/1]  
968 | | | | ↳ 237311<sub>DE</sub>  
969 | | | | ↳ I1a2a-3 △ CTS2729 [1/1], M5256/CTS8649/PF2381<sup>R2</sup> [1/1]  
970 | | | | ↳ 252002<sub>GB-E</sub>  
971 | | | | ↳ I1a2b<sup>65</sup> Z138/S296 [47/47], Z139/S338 [45/45], Z2540/PF2805<sup>R2</sup> [17/17]  
972 | | | | ↳ 144176<sub>IT</sub>, 152077<sub>DK</sub>, 19000<sub>▽</sub>, 194179<sub>US</sub>, 195628<sub>GB-E</sub>, 203087<sub>▽</sub>, 22666<sub>GB-E</sub>, 237611<sub>▽</sub>, 249295<sub>▽</sub>, 250861<sub>▽</sub>, 268137<sub>DE</sub>, 27308<sub>▽</sub>, 30384<sub>DK</sub>, 40638<sub>GB-E</sub>, 52010<sub>DE</sub>, 7121<sub>NO</sub>,  
973 | | | | 72690<sub>GB-E</sub>, 742<sub>▽</sub>, 85047<sub>GB</sub>, 85669<sub>▽</sub>, 923<sub>GB-E</sub>, 94810<sub>GB-E</sub>, B2520<sub>DE</sub>, B3477<sub>GB-E</sub>, N113262<sub>▽</sub>, N113969<sub>▽</sub>, N114766<sub>▽</sub>, N116077<sub>▽</sub>, N116628<sub>▽</sub>, N18619<sub>SE</sub>, N38648<sub>▽</sub>,  
974 | | | | N47000<sub>CH</sub>, N5004<sub>GB-W</sub>, N69770<sub>▽</sub>, N7250<sub>GB-E</sub>  
975 | | | | ↳ I1a2b1 Z2541 [10/10]  
976 | | | | ↳ 101902, 128312<sub>GB-S</sub>, 16855<sub>NO</sub>, 186577<sub>PT</sub>, 219867<sub>NL</sub>, 255966<sub>GB-S</sub>, 7001<sub>RO</sub>, 8319<sub>GB-E</sub>, E14854<sub>CH</sub>, N112406  
977 | | | | ↳ I1a2b-1 M5201/PF2364<sup>R2</sup> [3/3]  
978 | | | | ↳ 151617<sub>NL</sub>, 284453<sub>GB-S</sub>, 287017<sub>IE</sub>  
979 | | | | ↳ I1a2b-2 △ F3754<sup>R3</sup> [1/1]  
980 | | | | ↳ N114804  
981 | | | | ↳ ? I1a2b-3<sup>66</sup> L340<sup>R7</sup> [1/1]  
982 | | | | ↳ 143803  
983 | | | | ↳ ? I1a2b-4 L211 [2/2]  
984 | | | | ↳ N32687<sub>NL</sub>, N41751<sub>NL</sub>  
985 | | | | ↳ I1a3 Z63/S243 [42/42]  
986 | | | | ↳ 112268<sub>▽</sub>, 148532<sub>PT</sub>, 173757<sub>NL</sub>, 187422<sub>NL</sub>, 201061<sub>GB-E</sub>, 223698<sub>FR</sub>, 263284, 270328<sub>ES</sub>, 280240<sub>PL</sub>, 48539<sub>▽</sub>, 50559<sub>▽</sub>, 56147<sub>ES</sub>, 6715<sub>GB-S</sub>, 88190<sub>▽</sub>, 92519<sub>GB-E</sub>, 99247<sub>ES</sub>, 99448<sub>GB-E</sub>,  
987 | | | | B1493<sub>GB-E</sub>, N101637<sub>IE</sub>, N10705<sub>PL</sub>, N112685, N113540, N115531, N116336, N11902<sub>ES</sub>, N15874<sub>GB-E</sub>, N16531<sub>GB-W</sub>, N27671<sub>LB</sub>, N34614<sub>ES</sub>, N35444<sub>GB-E</sub>, N3626<sub>▽</sub>, N65497<sub>DE</sub>,  
988 | | | | N80204<sub>IT</sub>  
989 | | | | ↳ I1a3a CTS7416 [1/3], L1237 [7/7]  
990 | | | | ↳ 167703<sub>GB-E</sub>, 16934<sub>▽</sub> (Unexpected negative call: CTS7416- [at this level].), 211835<sub>GB-W</sub>, 7186<sub>PL</sub>, 84393<sub>CZ</sub>, N42570<sub>BA</sub>  
991 | | | | ↳ ? I1a3a-1<sup>67</sup> L1439<sup>R4</sup> [1/1] (between I and I1-1)  
992 | | | | ↳ 49061<sub>GB-E</sub> (Unexpected negative call: CTS7416- [1 level above, at I1a3a].)  
993 | | | | ↳ I1a3-1 F2221<sup>R2</sup> [1/1]  
994 | | | | ↳ 247267<sub>GB-E</sub>  
995 | | | | ↳ I1a3-2 F1354<sup>R3</sup> [1/1], PF4738/YSC0001329<sup>R2</sup> [1/1]  
996 | | | | ↳ N62806  
997 | | | | ↳ I1a-1 L343<sup>R5</sup> [1/1]  
998 | | | | ↳ 75432<sub>GB-S</sub>  
999 | | | | ↳ I1a-2 PF49<sup>R2</sup> [2/2]  
1000 | | | | ↳ B1566<sub>AU</sub>  
1001 | | | | ↳ I1a-2-1 PF6358 [1/1]  
1002 | | | | ↳ 113844

**I2a**

Continued from above (line 225 on page 12)

999 I2a L460/PF3647/S238 [208/208], PF3573 [203/203], Z2671/PF3876 [203/203]  
1000 → I2a1 P37/PF4004<sup>R6</sup> [226/226], PF3606<sup>R2</sup> [94/94], Z2609/CTS410/PF3949 [94/94], Z2611/PF3638 [94/94], Z2612/PF3966 [94/94], Z2620/CTS5044/PF4012 [94/94], Z2626/PF4058  
[94/94] (Cannot resolve: CTS595 [41/94], L1286 [2/3], L1287 [2/2] (no nearby negative results), PF3945 [93/94] (no nearby negative results))  
1001 → 51 non-Geno kits requiring further testing; 15183<sub>IT</sub> (Duplicate call: P37 [at this level].)  
1002 → I2a1b L178/S328 [65/65], M423 [91/91], S2768/CTS11030 [53/53], Z2575/CTS176/S2621 [53/53], Z2577/CTS1293/S2632 [53/53], Z2588/CTS1802/S2638 [51/53],  
Z2591/CTS5375/S2679 [53/53], Z2592/CTS5985/S2687 [53/53], Z2596/CTS7218/S2702 [53/53], Z2598/CTS8239/S2715 [53/53], Z2600/CTS8486/S2722 [53/53]  
1003 → 111034<sub>▽</sub>, 23820<sub>▽</sub>, 47365<sub>PL</sub>, 51460<sub>▽</sub>, 61870<sub>GB-E</sub>, 65352<sub>IE</sub>, 68215<sub>▽</sub>, 68320<sub>DE</sub>, 76062<sub>PL</sub>, N18656<sub>UA</sub>, N45770<sub>RO</sub>, N8977<sub>DE</sub>  
1004 → ? I2a1b1 M359/P41<sup>R2</sup>  
1005 → I2a1b2 L161/S185 [39/39]  
1006 → 100934<sub>▽</sub>, 113806<sub>IE</sub> (Duplicate call: P37 [2 levels above, at I2a1].), 195511<sub>IE</sub>, 220069<sub>▽</sub>, 231897<sub>IE</sub>, 294905<sub>▽</sub>, 306862<sub>GB</sub>, 42001<sub>PR</sub> (Duplicate call: P37 [2 levels above, at I2a1].),  
42164<sub>▽</sub>, 65681<sub>IE</sub>, 80197<sub>GB-E</sub>, 82530<sub>▽</sub> (Duplicate call: P37 [2 levels above, at I2a1].), 9620<sub>IE</sub> (Duplicate call: P37 [2 levels above, at I2a1].), N112423<sub>▽</sub>, N113076<sub>▽</sub>,  
N113873<sub>▽</sub>, N114332<sub>▽</sub>, N114458<sub>▽</sub>, N115773<sub>IE</sub>, N21963<sub>GB</sub> (Duplicate call: P37 [2 levels above, at I2a1].), N3728<sub>GB-E</sub> (Duplicate call: P37 [2 levels above, at I2a1].),  
N51288<sub>PL</sub>, N58513<sub>IE</sub>  
1007 → I2a1b2-1 L1498 [11/11]  
1008 → 138545<sub>IE</sub>, 186445<sub>GB-E</sub>, 235279<sub>IE</sub>, 57744<sub>IE</sub>, 58781<sub>GB-E</sub>, 9707<sub>GB</sub>, N12526<sub>GB</sub> (Duplicate call: P37 [3 levels above, at I2a1].), N28466<sub>IE</sub> (Duplicate call: P37 [3 levels above, at  
I2a1].), N90380  
1009 → I2a1b2-1-1 CTS4122 [1/1]  
1010 → N43038<sub>GB-E</sub> (Duplicate call: P37 [4 levels above, at I2a1].)  
1011 → I2a1b2-1-2 F3744<sup>R3</sup> [1/1]  
1012 → 29721<sub>DE</sub> (Duplicate call: P37 [4 levels above, at I2a1].)  
1013 → I2a1b2-2 PF4135 [5/5]  
1014 → 103208<sub>GB-S</sub>, 17299<sub>GB-S</sub> (Duplicate call: P37 [3 levels above, at I2a1].), 27753, 61687<sub>IE</sub>, 8172<sub>GB</sub>

<sup>65</sup> The placement of Z2805 at this level is problematic. Per [17], it is synonymous with CTS6629, and this SNP is consistently derived in all of I1. Compounding this issue, ISOGG's SNP database equates Z2805 with PF2805, and this appears to be incorrect. Consequently, the algorithm underlying this report has been temporarily configured to ignore CTS6629/Z2805.<sup>66</sup> L340 also found in nearby clade I1a1b-3 (line 882 on page 24). One set of instances may be erroneous. Further investigation required.<sup>67</sup> L1439 also found in nearby clade I1a1b1-1 (line 835 on page 24). L1439 also found in nearby clade I1b-1-2 (line 219 on page 12). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.

<sup>68</sup> L1300 also found in nearby clade I2a1a1 (line 1052 on this page). One set of instances may be erroneous. Further investigation required.  
 Results for M707 have been discarded.

<sup>69</sup> L1300 also found in nearby clade I2a1a (line 1049 on this page). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.<sup>70</sup> L1196 also found in nearby clade I2a2a1c2b-1 (line 1169 on page 29). One set of instances may be erroneous. Further investigation required.<sup>71</sup> L1316 also found in nearby clade I2a2a1b1-3 (line 1134 on this page). One set of instances may be erroneous. Further investigation required.<sup>72</sup> L1196 also found in nearby clade I2a2a1c2b-1 (line 1169 on page 29). One set of instances may be erroneous. Further investigation required.<sup>73</sup> L1316 also found in nearby clade I2a2a1a1a-4 (line 1116 on this page). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.



<sup>74</sup> PF3627 also found in nearby clade I2a2a1c2b-1-1 (line 1171 on this page). One set of instances may be erroneous. Further investigation required.

<sup>75</sup> L1196 also found in nearby clade I2a2a1c2a1a-1 (line 1106 on page 28). L1196 also found in nearby clade I2a2a1b1-1 (line 1130 on page 28). One set of instances may be erroneous. Further investigation required.

<sup>76</sup> PF3627 also found in nearby clade I2a2a1c1a-1 (line 1155 on this page). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.

1212 | | | ↳ I2a2a1c2a2-1-1-1-1<sup>△</sup> Z2262/PF5268<sup>R4</sup> [1/1]  
 1213 | | | ↳ N42121<sub>SE</sub>  
 1214 → I2a2a1c2a2-2 L1272/CTS661<sup>R2</sup> [3/3]  
 1215 | | ↳ 186219<sub>GB</sub>, 28482, N9060<sub>GB</sub>  
 1216 → I2a2a1c2a2-3 CTS7010<sup>R2</sup> [1/1], PF3292<sup>R3</sup> [1/1]  
 1217 | | ↳ 210258<sub>DE</sub>  
 1218 → I2a2a1c2a2-4 PF3833 [6/9], Z2198 [5/6] (between I2a2a1c2a2-4 and I2a2a1c2a2-4-1)  
 1219 | | ↳ 145573<sup>▼</sup>, 46492 (Unexpected negative calls: Z2198- [at this level], CTS6433- [1 level above, at I2a2a1c2a2], L801- [2 levels above, at I2a2a1c2a], Z183- [3 levels above, at I2a2a1c2-1].)  
 1220 | | ↳ I2a2a1c2a2-4-1 Z76 [27/27]  
 1221 | | | ↳ 102637, 115911<sub>GB-S</sub>, 124358<sub>NO</sub>, 128255<sub>CH</sub>, 148361<sub>IE</sub>, 18187<sub>PT</sub>, 19282<sub>FR</sub>, 194078<sub>DE</sub> (Duplicate call: L1316. Presumed L1316+.), 201831<sub>GB</sub>, 205736<sub>GB</sub>, 206773<sub>NO</sub>, 216400<sub>NO</sub>, 218174<sub>PL</sub> (Unexpected negative call: CTS6433- [2 levels above, at I2a2a1c2a2].), 2238<sub>GB-E</sub>, 227692<sub>FR</sub>, 35000<sub>GB</sub>, 5645<sub>DE</sub>, 7117<sub>IE</sub>, 76513<sub>GB-E</sub>, 77830<sub>SE</sub>, 86247, 99860<sub>DE</sub>, N20850<sub>DK</sub>, N38220<sub>GB</sub>, N4230, N52116<sub>GB-S</sub>, N95564<sub>NO</sub>  
 1222 | | | ↳ I2a2a1c2a3 L1290 [6/6], L1317 [7/7]  
 1223 | | | ↳ 113471<sub>GB-S</sub>, 1499, 16711<sub>GB-S</sub>, 208157<sub>IE</sub>, 244137<sub>DE</sub>, 35845<sub>BE</sub>, N1821<sub>IE</sub>  
 1224 → I2a2a1-1<sup>△</sup> P53<sup>R6</sup> [1/1], PF1335<sup>R2</sup> [1/1]  
 1225 | | ↳ 235788<sub>US</sub>  
 1226 → I2a2a1-2<sup>△</sup> L104 [1/1]  
 1227 | | ↳ 260658<sub>DE</sub>  
 1228 → I2a2a2 L1228<sup>R2</sup> [2/2]  
 1229 | | ↳ N114966<sub>IT</sub> (Duplicate call: CTS9266 [1 level above, at I2a2a]. Presumed CTS9266+.)  
 1230 → I2a2a2-1 Z524<sup>R2</sup> [1/1]  
 1231 | | ↳ N115430<sub>PT</sub>  
 1232 ? I2a2a-1<sup>△</sup> M4747/L484/PF7258 [2/2] (no nearby negative results)  
 1233 | | ↳ 48610, N54723<sub>UA</sub>  
 1234 → I2a2b L38/S154 [29/29], L39/S155 [58/58], L40/S156 [27/27], L65/S159<sup>R2</sup> [11/11], L272<sup>R3</sup> [4/4]  
 1235 | | ↳ 49 non-Geno kits requiring further testing; 181584, 286659<sub>US</sub>, N102603<sub>RO</sub>, N113338, N113339, N115535, N116757, N28458<sub>FR</sub>, N43230<sub>GB-W</sub>, N77464<sub>GB</sub>, N79341<sub>ES</sub>  
 1236 ? I2a2b1 L533/S295 [2/2]  
 1237 | | ↳ 114418<sub>DE</sub>, 17821<sub>FR</sub>  
 1238 → I2a2b-1 F3483<sup>R2</sup> [1/1], M1196/F180/PF5881<sup>R4</sup> [1/1], M2613/PF5821<sup>R3</sup> [1/1], M3596/PF3068<sup>R4</sup> [1/1], M5308/PF2552<sup>R2</sup> [1/1], PF735<sup>R2</sup> [1/1], PF2055<sup>R1</sup> [1/1], PF2111<sup>R3</sup> [1/1], PF2331<sup>R2</sup> [1/1], PF4635<sup>R2</sup> [1/1], PF5589<sup>R3</sup> [1/1], PF7445<sup>R4</sup> [1/1], YSC0000082<sup>R2</sup> [1/1], Z35/S487<sup>R2</sup> [1/1], Z211/PF7595/S358<sup>R2</sup> [1/1], Z273<sup>R5</sup> [1/1], Z394/PF5280<sup>R2</sup> [1/1], Z402/PF5420<sup>R2</sup> [1/1], Z465<sup>R3</sup> [1/1], Z1856/PF4850<sup>R3</sup> [1/1]  
 1239 | | ↳ 191974  
 1240 → I2a2b-2 S3361/CTS3402<sup>R2</sup> [1/1]  
 1241 | | ↳ N113408  
 1242 → I2a2b-3 F780 [1/1]  
 1243 | | ↳ N74871<sub>NL</sub>

**J1**

Continued from above (line 241 on page 13)

1244 J1 CTS8340<sup>R3</sup> [111/111], CTS10640 [111/111], F4287 [111/111], YSC0000218 [111/111], L255 [21/21], L321/PF4646 [110/111], L765/PF4765 [111/111], L828/PF4771/YSC0000226 [114/114], M267/PF4782/F4320 [198/204], M497/PF4740 [111/111], PF4630 [111/111], PF4632<sup>R2</sup> [111/111], PF4636 [97/111], PF4641/CTS426/YSC0000307/YSC0307 [111/111], PF4643/YSC0000063 [111/111], PF4647/YSC0000068 [111/111], PF4648/CTS1138 [111/111], PF4649/YSC0000069/YSC0069/S4991 [111/111], PF4653 [111/111], PF4656 [111/111], PF4659 [111/111], PF4661/YSC0001324<sup>R2</sup> [111/111], PF4662/YSC0001325 [111/111], PF4664 [111/111], PF4666/YSC0000078<sup>R2</sup> [106/111], PF4667/YSC0000079 [111/111], PF4668 [111/111], PF4669 [111/111], PF4672 [111/111], PF4675 [111/111], PF4676 [109/111], PF4687/CTS1547 [111/111], PF4691/CTS1983/YSC0001326 [111/111], PF4695 [109/111], PF4701/F1825 [111/111], PF4702/CTS3210 [111/111], PF4704/YSC0000172/YSC0172 [111/111], PF4705/CTS3401/YSC0001267 [111/111], PF4707/CTS3492 [111/111], PF4710/YSC0000175 [111/111], PF4713/CTS4025/YSC0001276 [111/111], PF4715/CTS4133/YSC0001277 [111/111], PF4719/CTS4294/YSC0001280 [111/111], PF4721/F2058 [111/111], PF4725/CTS5285/YSC0001282 [111/111], PF4726/F4200 [111/111], PF4727/YSC0000187 [106/111], PF4728/CTS5394/YSC0001283 [111/111], PF4738/YSC0001329<sup>R2</sup> [111/111], PF4742/CTS7412 [111/111], PF4743/CTS7598/YSC0001287/YSC1287 [111/111], PF4744/YSC0000198 [110/111], PF4747/CTS8183/YSC0001290 [111/111], PF4748/YSC0000199 [111/111], PF4753/YSC0000209/YSC0209/S5033 [111/111], PF4755/F4289/YSC0001013 [111/111], PF4759 [111/111], PF4761 [111/111], PF4762 [111/111], PF4764 [111/111], PF4768 [111/111], PF4769 [111/111], PF4773 [111/111], PF4774/YSC0001330/YSC1330 [111/111], PF4780 [111/111], PF4787 [111/111], PF4788 [111/111], YSC0000177 [111/111] (Cannot resolve: PF7264 [2/111])  
 1245 | | ↳ 154480<sup>▼</sup>, 242180<sup>▼</sup>, 256759<sup>▼</sup>  
 1246 → J1-1<sup>△</sup> PF4644/YSC0000065 [110/110], PF4772 [110/110], Z2213/CTS3068/PF4700/YSC0001264 [110/110], Z2214/CTS4274/PF4717 [110/110], Z2219/CTS12238 [110/110]  
 1247 → J1a<sup>77</sup> PF4723/CTS5169<sup>R2</sup> [103/108], Z2215/CTS5368 [6/6]  
 1248 | | ↳ 207647<sub>GB</sub>  
 1249 ? J1a1 M365<sup>R3</sup> [1/1]  
 1250 | | ↳ 73612<sub>PT</sub>  
 1251 → J1a3 CTS1267 [12/12], CTS3569/YSC0001269/YSC1269 [12/12], CTS6379 [12/12], Z1828/CTS515/CTS15 [15/15], Z1829 [15/15], Z1832 [15/15], Z1834 [19/19], Z1836/CTS6412 [15/15], Z1840/CTS7094 [15/15], Z1841 [15/15], Z1844/CTS10957 [15/15] (Cannot resolve: L1187 [3/3] (no nearby negative results), L1188 [6/6] (no nearby negative results), Z1833 [4/4], Z1839/CTS7022 [4/4] (no nearby negative results), Z1843 [4/4] (no nearby negative results))  
 1252 | | ↳ 125412<sub>DE</sub>, 85654<sub>SK</sub>, N116093, N9318<sub>PL</sub>  
 1253 → J1a3a Z1842 [14/14]  
 1254 | | ↳ 298564<sub>RU</sub>  
 1255 → J1a3a-1 CTS1460 [13/13]  
 1256 | | | ↳ 199820<sub>GE</sub>, 252043<sub>RU</sub> (Presumed CTS1460-), 255172<sub>SA</sub>, E4998<sub>TR</sub>, N114946, N117826, N12483<sub>IT</sub>, N26910<sub>IT</sub>, N30421<sub>GR</sub>, N63799<sub>FR</sub>, N70550<sub>TR</sub>, N78611<sub>IQ</sub>  
 1257 | | | ↳ J1a3a-1-1 M228/L972<sup>R2</sup> [1/1]  
 1258 | | | ↳ 211325<sub>GE</sub> (Unexpected negative call: M228- [at this level].)  
 1259 → J1a3-1 L1189 [3/3]  
 1260 | | | ↳ 181880<sub>UA</sub>, N103814<sub>NO</sub>, N14628<sub>DE</sub>  
 1261 → J1a-1<sup>△</sup> L620 [102/102], L825/PF4824/YSC0000214 [95/95], L826/YSC0000073/YSC0073 [95/95], PF4634<sup>R2</sup> [95/95], PF4670 [95/95], PF4809/YSC0000171/YSC0171 [95/95], YSC0000168 [95/95], Z1868/CTS6954/PF4734 [95/95], Z2345/PF4657 [95/95], Z2359/PF4708/YSC0000173/YSC0173 [95/95], Z2361/PF4720/YSC0000184/YSC0184/S5004 [95/95], Z2373/PF4758 [95/95], Z2378/PF4779/YSC0000229/YSC0229 [95/95]  
 1262 | | | ↳ 16240<sub>GB-E</sub> (Duplicate call: Z2215 [1 level above, at J1a]. Presumed Z2215+.), 178272 (Duplicate call: Z2215 [1 level above, at J1a]. Presumed Z2215+.)

<sup>77</sup> PF4723 also found in nearby clade J1-2-1 (line 1375 on page 32). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.<sup>78</sup> Z2354 also found in nearby clade J1a2 (line 1264 on page 31). One set of instances may be erroneous. Further investigation required.<sup>79</sup> Z2354 also found in nearby clade J1a-1-1 (line 1263 on this page). One set of instances may be erroneous. Further investigation required.<sup>80</sup> L147 also found in nearby clade J1a2b2 (line 1276 on this page). One set of instances may be erroneous. Further investigation required.<sup>81</sup> L147 also found in nearby clade J1a2b-1 (line 1271 on this page). One set of instances may be erroneous. Further investigation required.<sup>82</sup> YSC0000076 also found in nearby clade J1a2b2-1-1-1-1-1 (line 1312 on this page). One set of instances may be erroneous. Further investigation required.<sup>83</sup> YSC0000076 also found in nearby clade J1a2b2a-4-1 (line 1298 on this page). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.**J2**

Continued from above (line 242 on page 13)

1381	<b>J2</b>	L228/PF4895/S321/F4087 [173/173], M172/PAGE28/PF4908/PAGES00028 [546/552], M2060/CTS7404/PF4916 [168/168], PF4597 [168/168], PF4886 [168/168], PF4893/CTS886 [168/168], PF4898 [163/168], PF4920/F4272 [167/168], PF4922/F4283 [168/168], PF4925 [168/168], PF4926 [163/168], PF4933/F3343 [168/168]
1382	<b>J2a</b>	CTS5066 [146/146], CTS10036 [146/146], CTS12014 [146/146], CTS12015 [146/146], F2078 [146/146], F1559 <sup>R4</sup> [146/146], L152 [1/1], L212/PF4988 [153/153], L505/PF4987 [148/148], L559/PF4986 [147/147], M410/PF4941 [154/155], PF4500 [145/146], PF4527 [146/146], PF4884/CTS113 [146/146], PF4891 [145/146], PF4897/F4095 [146/146], PF4918/F4266 [146/146], PF4942 [146/146], PF4948/F841 [146/146], PF4949/CTS1030 [146/146], PF4952 [146/146], PF4953 [141/146], PF4955 <sup>R3</sup> [146/146], PF4956/F4100 [146/146], PF4957/F1183 [146/146], PF4958/F4106 [146/146], PF4959 [146/146], PF4965/CTS4360 [146/146], PF4966/CTS4540 [146/146], PF4968/CTS5482 [146/146], PF4969/CTS5867 [146/146], PF4972/F2418 [146/146], PF4974/CTS8264 [146/146], PF4975/F2672 [146/146], PF4976/F4259 [146/146], PF4982 [146/146], PF4985 [146/146], PF4990/F4334 [146/146], PF4992 [146/146] (Cannot resolve: PF5053 [4/146])

<sup>84</sup> These kits have one or more positive SNPs known or proposed to be at the J1a2b3a1-1 level (line 1360 on this page): 148197 (1) and N113025 (1). Further investigation is required.<sup>85</sup> PF7257 also found in nearby clade J1-1-1 (line 1372 on this page). One set of instances may be erroneous. Further investigation required.<sup>86</sup> PF7257 also found in nearby clade J1a-2 (line 1368 on this page). One set of instances may be erroneous. Further investigation required.<sup>87</sup> PF4723 also found in nearby clade J1a (line 1247 on page 30). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.<sup>88</sup> Kit 65789 has 1 positive SNP from the J2a1h2-3-2 level (line 1467 on page 34). Further investigation is required.<sup>89</sup> L530 and L531 also found in nearby clade J2a1h2-2-1-2-1 (line 1431 on this page). One set of instances may be erroneous. Further investigation required.<sup>90</sup> L530 and L531 also found in nearby clade J2a1h2d (line 1401 on this page). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.

1443 → J2a1h2a1a M137 [1/1]  
 1444   └→ 35507  
 1445 ?→ J2a1h2a1b M318 [1/1]  
 1446   └→ 144812  
 1447 → J2a1h2a1-1 PF5453/CTS6061 [15/15], Z2173/CTS3601 [15/15]  
 1448   └→ N49931<sub>DE</sub>  
 1449 → J2a1h2a1-1-1 PF5456 [13/14]  
 1450   └→ 173911<sub>DE</sub>, 205572<sub>DE</sub>, 23148<sub>NL</sub>, 285671<sub>ES</sub>, 293743, 88836<sub>GB-E</sub>, N109802<sub>UA</sub>, N112520<sub>MX</sub>, N116466, N24443<sub>SI</sub>, N69566<sub>ES</sub>, N77859<sub>GB-E</sub>  
 1451   └→ J2a1h2a1-1-1-1 CTS7767<sup>R4</sup> [1/1]  
 1452   └→ N48966<sub>IT</sub>  
 1453 → J2a1h2a1-1-1-2 L101<sup>R3</sup> [1/1], L129 [1/1] (no nearby negative results), L295<sup>R3</sup> [1/1], L910 [3/3], L911 [2/2], L912 [2/2], L913 [2/2],  
       L978/PF93<sup>R3</sup> [1/1], L1276 [2/2] (no nearby negative results), L1277 [1/1] (no nearby negative results), L1278 [1/1] (no nearby negative  
       results)  
   └→ 204221<sub>AM</sub> (Duplicate call: PF5456 [1 level above, at J2a1h2a1-1-1]. Suspected no-call for PF5456.), 209115<sub>AM</sub>, 228661<sub>AM</sub>  
 1454 → J2a1h2a1-2 PF5896/P244<sup>R2</sup> [7/7]  
 1455   └→ 145585<sub>PL</sub> (Duplicate call: P244 [at this level].), 146291<sup>▽</sup><sub>PL</sub>, 195459<sub>UA</sub> (Duplicate call: P244 [at this level].), 60749<sup>▽</sup><sub>UA</sub>, N14132<sup>▽</sup><sub>UA</sub> (Duplicate call: P244 [at this  
       level].)  
 1456 → J2a1h2a1-2-1<sup>△</sup> Z273<sup>R5</sup> [1/1]  
 1457   └→ N114002  
 1458 → J2a1h2a1-2-2 L530<sup>R3</sup> [1/1] (between J2a1h and J2a1h2), L531<sup>R3</sup> [1/1] (between J2a1h and J2a1h2)  
 1459   └→ 183028 (Duplicate call: P244 [1 level above, at J2a1h2a1-2].)  
 1460 ?→ J2a1h2a1-3 L396 [2/2]  
 1461   └→ 164554<sub>LT</sub>, 4515<sub>PL</sub>  
 1462 → J2a1h2-3-1<sup>91</sup> Z402/PF5420<sup>R2</sup> [6/6], Z405/PF5422 [6/6] (Cannot resolve: CTS1192/PF5413/Z2165 [4/6], Z420/PF5427 [5/6])  
 1463   └→ 200756<sub>GB</sub>, N106993<sub>GB-E</sub>, N113887<sub>FR</sub>, N114066, N114556  
 1464 → J2a1h2-3-1-1 CTS1451<sup>R2</sup> [1/1]  
 1465   └→ N114108  
 1466 ?→ J2a1h2-3-2 L270<sup>R2</sup> [1/1]  
 1467   └→ 56667  
 1468 ?→ J2a1h2-3-3 L367 [1/1]  
 1469   └→ 114188  
 1470 → J2a1h-1<sup>92</sup> PF2254<sup>R2</sup> [1/1], Z424/PF5313 [1/1]  
 1471   └→ 18332<sub>DE</sub>  
 1472 → J2a1-1-1 Z2397/PF5197 [17/18]  
 1473 → J2a1-1-1-1 PF5172 [10/10], PF5190 [10/10]  
 1474 → J2a1-1-1-1-1 PF5169 [11/11], PF5176 [9/9], PF5191<sup>R2</sup> [9/9], PF5207 [9/9] (Cannot resolve: L927/CTS161/PF4885 [2/2] (no nearby negative results), L1064  
       [2/3])  
 1475   └→ 168722<sup>▽</sup><sub>IL</sub>  
 1476 → J2a1i L88<sup>R8</sup> [3/6], L198<sup>R4</sup> [2/6], L432<sup>R3</sup> [2/5], L433<sup>R4</sup> [2/5]  
 1477   └→ 153545<sup>▽</sup><sub>SA</sub>  
 1478 → J2a1i-1 PF5203 [1/1]  
 1479   └→ 9856<sub>CH</sub>  
 1480 → J2a1i-2 PF5233 [4/4]  
 1481   └→ 262925, 294898<sub>MX</sub>, 299885, N88317<sub>AZ</sub>  
 1482 → J2a1-1-1-1-1-1 PF5199 [4/4], PF5215 [4/4], PF5216 [4/4]  
 1483   └→ 248045<sub>ES</sub> (Duplicate call: PF5197 [3 levels above, at J2a1-1-1]. Suspected no-call for PF5197.)  
 1484 → J2a1-1-1-1-1-1-1 PF5174 [3/3]  
 1485   └→ J2a1-1-1-1-1-1-1-1 PF5177 [2/2], PF5221 [2/2]  
 1486    └→ J2a1-1-1-1-1-1-1-1-1 F774<sup>R4</sup> [1/1], L101<sup>R3</sup> [1/1], L295<sup>R3</sup> [1/1], PF103<sup>R2</sup> [1/1], PF132<sup>R2</sup> [1/1], PF162<sup>R2</sup> [1/1], PF3254<sup>R2</sup> [1/1], PF4632<sup>R2</sup> [1/1]  
 1487    └→ N115337  
 1488 → J2a1-1-1-1-1-1-1-2 PF7421 [1/1], PF7423 [1/1]  
 1489    └→ N76290  
 1490 → J2a1-1-1-1-1-1-1-2 PAGE18/PAGES00018<sup>R3</sup> [1/1]  
 1491    └→ N114846  
 1492 ?→ J2a1-1-1-1-1-2 L250<sup>R2</sup> [1/1], L251<sup>R2</sup> [1/1], Z2220/CTS47/PF5159 [1/1]  
 1493    └→ E4955<sub>AT</sub>  
 1494 → J2a1-1-1-1-2 CTS904<sup>R2</sup> [1/1]  
 1495    └→ N115753  
 1496 → J2a1-1-1-2 YSC0000253 [7/7], PF4341<sup>R5</sup> [7/7]  
 1497    └→ 271582<sub>SA</sub>  
 1498 → J2a1-1-1-2-1 L160/PF4013/S184<sup>R3</sup> [1/1], PF2246<sup>R2</sup> [1/1]  
 1499    └→ N117581  
 1500 → J2a1-1-1-2-2 YSC0000246 [5/5]  
 1501    └→ 198631<sub>AF</sub>, B1620<sub>IQ</sub>, N113114, N3437<sub>IN</sub>  
 1502 → J2a1-1-1-2-2-1 L927/CTS161/PF4885<sup>R4</sup> [1/1] (no nearby negative results)  
 1503    └→ N5341<sub>BG</sub>  
 1504 → J2a1-2 PF5116 [44/45], PF5125 [44/45]  
 1505 → J2a1-2-1 PF5123 [43/44], PF5127 [43/44], PF5138 [43/44]  
 1506 → J2a1-2-1-1 PF5119 [42/43]  
 1507    └→ N116047<sup>▽</sup><sub>TR</sub>  
 1508 → J2a1b M67/PF5137/S51 [116/118], PF5130/CTS6372 [35/37], PF5135 [35/37], PF5143<sup>R2</sup> [35/37], Z1845/PF5146 [35/37], Z1847/PF5126 [35/37], Z2240/PF5120  
       [35/37]  
 1509    └→ 149519<sup>▽</sup><sub>DK</sub>, 159331<sup>▽</sup><sub>PT</sub>, 165078<sup>▽</sup><sub>IT</sub>, 177629<sup>▽</sup><sub>GB-S</sub>, 17774<sup>▽</sup><sub>GB</sub>, 18790<sup>▽</sup><sub>IT</sub>, 216529<sup>▽</sup><sub>GE</sub>, 258997<sup>▽</sup><sub>GE</sub>, 271774<sub>RU</sub>, 46523<sup>▽</sup>, 6582<sup>▽</sup>, 86809<sup>▽</sup>, 97342<sup>▽</sup><sub>ES</sub>, E10959<sup>▽</sup>, E12467<sup>▽</sup>,  
       E16177<sub>DE</sub>, N59703<sub>TR</sub>, N61637<sub>IE</sub>, N68160<sub>IT</sub>  
 1510 ?→ J2a1b2 M166  
 1511 → J2a1b-1 Z467 [16/16]  
 1512    └→ 139708<sub>DE</sub>, 177471, 43094<sub>GB-S</sub>, E16635<sub>FR</sub>, M8232<sub>KW</sub>, N112768  
 1513 → J2a1b3 CTS2152 [8/8], CTS2330 [8/8], CTS9000 [8/8], CTS9425 [8/8], CTS9880 [8/8], L210 [24/24], L218 [10/10], L227 [10/10], L742 [9/9], Z447  
       [8/8], Z450 [8/8], Z451 [8/8], Z452 [8/8], Z453 [8/8], Z455 [8/8], Z456 [8/8], Z457 [8/8], Z458 [8/8], Z461 [8/8], Z463 [8/8], Z466 [8/8], Z469  
       [8/8], Z470 [8/8], Z471 [8/8], Z472 [8/8], Z474 [8/8], Z475 [8/8], Z476 [8/8], Z492 [8/8]

<sup>91</sup> Z405 may have a wider scope than this subclade.

<sup>92</sup> Z424 may have a wider scope than this subclade.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.<sup>93</sup> Z482 may have a wider scope than this subclade.<sup>94</sup> L927 also found in nearby clade J2a1b-2-1-1 (line 1547 on this page). One set of instances may be erroneous. Further investigation required.<sup>95</sup> L927 also found in nearby clade J2a1b3-3-1 (line 1524 on this page). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.

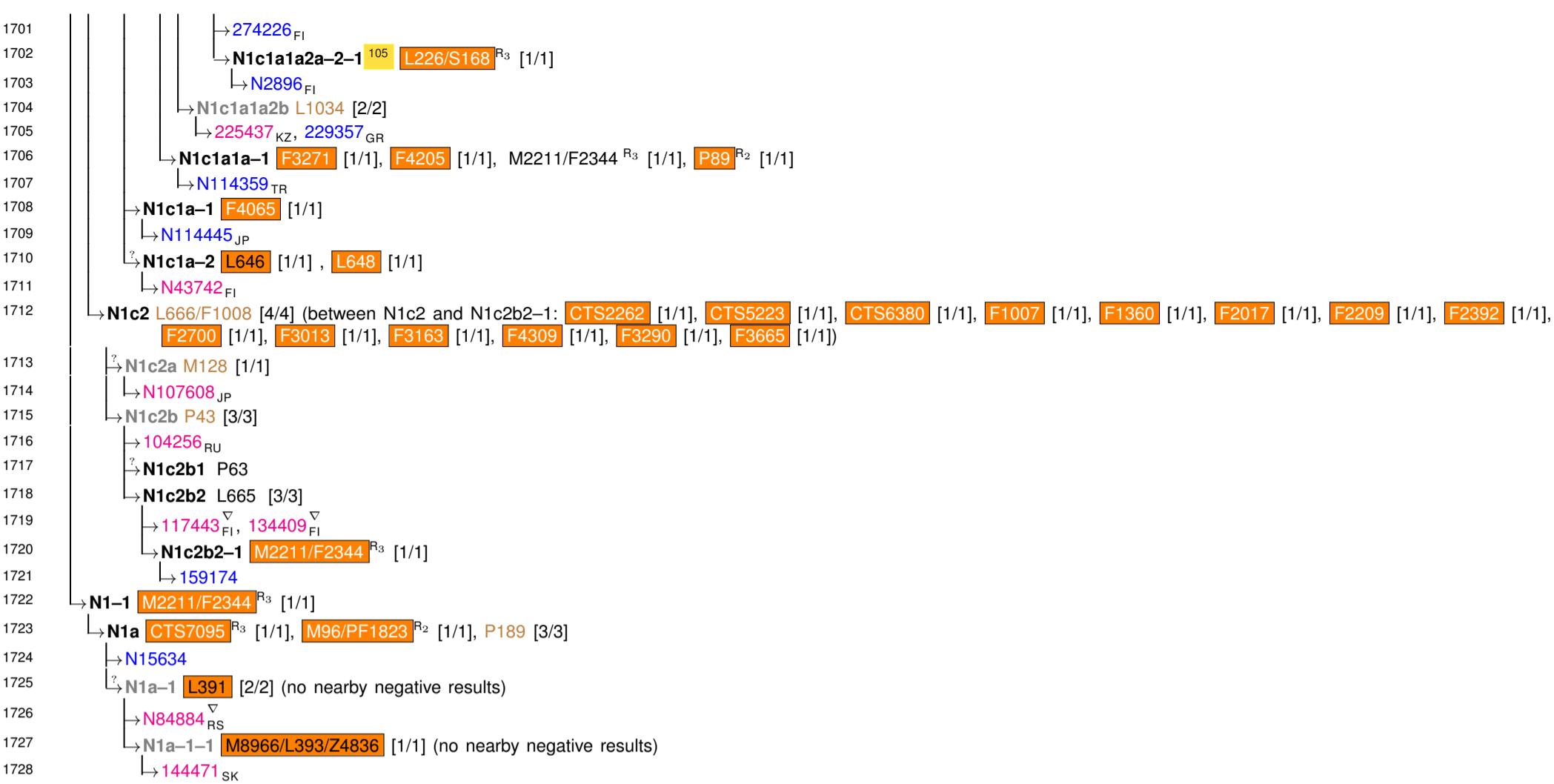
N

Continued from above (line 321 on page 14)

1636 N M231/PAGE91/PAGES00091 [131/131] (between N and N1: CTS813 [72/72], CTS1653 [72/72], CTS8893 [72/72], F1357 [72/72], F769 [69/72], F1529<sub>R2</sub> [72/72], F2968 [72/72], F3518 [72/72], M2100/F3227 [72/72], M2137/CTS568 [72/72], M2144/F1052 [72/72], M2145/F1053 [72/72], M2146/F1068 [72/72], M2156/F1257 [72/72], M2158/F1359 [72/72], M2160/F3693 [72/72], M2161/F3694 [72/72], M2168/F1715 [72/72], M2173/CTS2652 [72/72], M2175/CTS2947 [72/72], M2177/F1815 [72/72], M2182/CTS3734 [72/72], M2188/M232 [72/72], M2189/F1951 [72/72], M2192/L394 [74/74], M2199/F2080 [72/72], M2200/F2088 [72/72], M2205/F2201 [72/72], M2224/CTS7433 [72/72], M2225/F2509 [72/72], M2226/CTS7551/L667 [75/75], M2230/F2571 [72/72], M2237/F2636/L734 [72/72], M2239/F2692 [72/72], M2241/CTS8687 [72/72], M2245/F2783 [71/72], M2250/F2919 [71/72], M2252/F2981 [72/72], M2253/F2999 [72/72], M2254/CTS10117 [72/72], M2260/F3108 [72/72], M2262/F3123 [72/72], M2270/F3235 [72/72], M2275/F3299 [72/72], M2277/F3308 [72/72], M2296/F3426 [72/72], M2302/F3641 [72/72], M2349/F1061 [68/72])

<sup>96</sup> Z574 also found in nearby clade J2b2a-2 (line 1630 on this page). One set of instances may be erroneous. Further investigation required.<sup>97</sup> Kit 77755 has 1 positive SNP from the J2b2a-2 level (line 1630 on this page). Further investigation is required.<sup>98</sup> Z638 also found in nearby clade J2b2a-2 (line 1630 on this page). One set of instances may be erroneous. Further investigation required.<sup>99</sup> Z529 also found in nearby clade J2b2a-2 (line 1630 on this page). One set of instances may be erroneous. Further investigation required.<sup>100</sup> Z574 also found in nearby clade J2b1-2 (line 1598 on this page). Z638 also found in nearby clade J2b2a-1-1 (line 1606 on this page). Z529 also found in nearby clade J2b2a-1-1-3 (line 1624 on this page). One set of instances may be erroneous. Further investigation required.

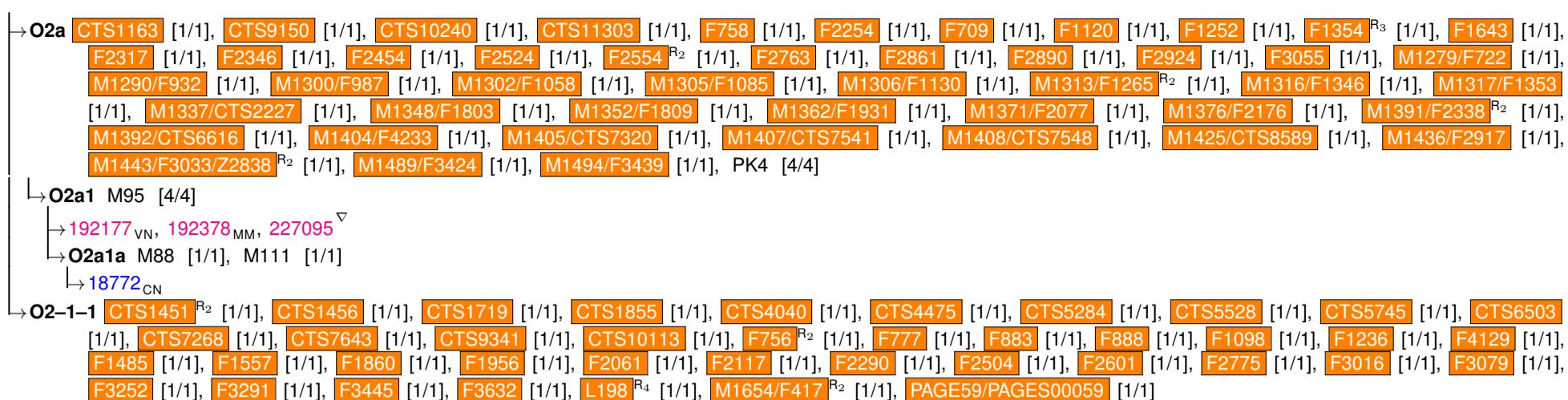
Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.<sup>101</sup> M2283 also found in nearby clade N1c (line 1644 on this page). One set of instances may be erroneous. Further investigation required.<sup>102</sup> M2283 also found in nearby clade N1b-1 (line 1642 on this page). One set of instances may be erroneous. Further investigation required.<sup>103</sup> These kits have one or more positive SNPs known or proposed to be at the N1c1a1a1-1 level (line 1706 on page 38): 176781 (1) and N56160 (1). Further investigation is required.<sup>104</sup> L226 also found in nearby clade N1c1a1a2a-2-1 (line 1702 on page 38). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.

Continued from above (line 322 on page 14)

<sup>105</sup> L226 also found in nearby clade N1c1a1a2a-1-2 (line 1694 on page 37). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.

## Q

Continued from above (line 346 on page 15)



/version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.

1875 → 152850<sub>RU</sub>, 244508<sub>UA</sub>  
1876 ↳ Q1a2a1c1 L329 [2/2], L332 [2/2], L333 [2/2]  
1877 ↳ 143861, 38126<sub>FR</sub> (Duplicate call: P36 [6 levels above, at Q1].)

1878 ↳ Q1a2b L940 [3/3]  
1879 → 68507<sub>▼</sub>  
1880 → Q1a2b1 L527 [2/2], L529<sup>R2</sup> [2/2], L639  
1881 ↳ 128283<sub>PL</sub>, 19774<sub>GB-E</sub>  
1882 → Q1a2b2 L933 [2/2], L938 [3/3], L941 [1/1]  
1883 ↳ 166847<sub>PT</sub>, 194161<sub>TR</sub>, 195603<sub>US</sub>  
1884 → Q1a2b2a L939  
1885 ↳ Q1a2c M323<sup>R2</sup>  
1886 → Q1a2-1<sup>△</sup> F835 [1/1], F1161 [1/1], F1513 [1/1], F2125<sup>R3</sup> [1/1], F3567 [1/1], F1872 [1/1]  
1887 ↳ N23969<sub>NO</sub>  
1888 → Q1a2-2<sup>△</sup> Z1352/CTS12652<sup>R4</sup> [1/1]  
1889 ↳ 242869<sub>AM</sub>  
1890 ↳ Q1a2-3<sup>△</sup> L932 [1/1] (no nearby negative results)  
1891 ↳ 49663  
1892 → Q1b L275 [14/14], L314 [13/13], L606 [4/4], L612/F711 [11/11] (between Q1b and Q1b1: F1213 [9/9], F1349 [9/9], F1594 [9/9], F1734 [9/9], F1780 [9/9], F1836 [9/9], F1839 [9/9], F2230 [9/9], F2628 [9/9], F2877 [9/9], F803 [9/9], F815 [9/9], F1082 [9/9], F108<sup>R2</sup> [9/9], F1126 [9/9], F1169 [9/9], F1205 [9/9], F1337 [9/9], F1528 [9/9], F1537 [9/9], F1858 [9/9], F1875 [8/9], F1974 [9/9], F2023 [9/9], F2145 [9/9], F2250 [8/9], F2313 [9/9], F2343 [9/9], F2440 [9/9], F2657 [9/9], F2777 [9/9], F2851 [9/9], F2894 [9/9], F2934 [9/9], F3084 [9/9], F3121 [9/9], F3193 [9/9], F3207 [9/9], F3389 [9/9], F3621 [9/9], F3680 [9/9])  
1893 ↳ 26360  
1894 ↳ Q1b1 L214/S289 [13/13], L215/PAGE82/S325/PAGE082 [13/13], M378/PAGE100 [17/17]  
1895 → 53682<sub>▼</sub>  
1896 → Q1b1a L245 [16/16]  
1897 → 117351<sub>UA</sub>, 172625<sub>PL</sub>, 173902<sub>TR</sub>, 196332<sub>UA</sub>, 208674<sub>▼</sub>, 237760<sub>IT</sub> (Duplicate call: P36 [3 levels above, at Q1].), 247540 (Duplicate call: F2250 [2 levels above, at Q1b].)  
Suspected no-calls for F1875 and F2250., 45731<sub>▼</sub><sub>UA</sub>, 50021<sub>▼</sub>, M6760<sub>▼</sub>, N63269<sub>CH</sub>  
1898 → Q1b1a1 L74<sup>R3</sup> [1/1] (no nearby negative results), L76<sup>R2</sup> [1/1] (no nearby negative results), L88<sup>R8</sup> [1/1], L272<sup>R3</sup> [1/1]  
1899 ↳ 95307<sub>IT</sub> (Duplicate call: P36 [4 levels above, at Q1].)  
1900 → Q1b1a-1 PF3231<sup>R6</sup> [1/1]  
1901 ↳ 286457  
1902 → Q1b1a-2 F1748 [3/3]  
1903 ↳ 148637 (Duplicate call: P36 [4 levels above, at Q1].), E5340<sub>TR</sub>, N114044  
1904 → Q1b1-1 L327 [1/1], Z2262/PF5268<sup>R4</sup> [1/1]  
1905 ↳ 13254<sub>PT</sub> (Duplicate call: P36 [3 levels above, at Q1].)

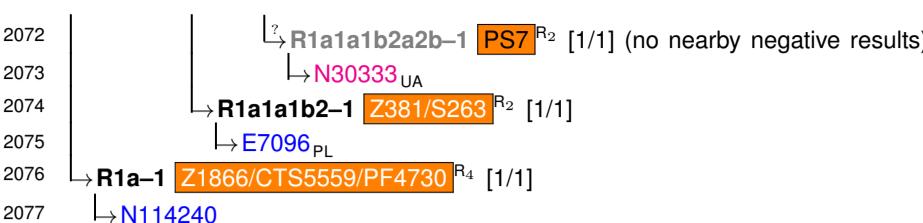
R1a

*Continued from above (line 351 on page 15)*

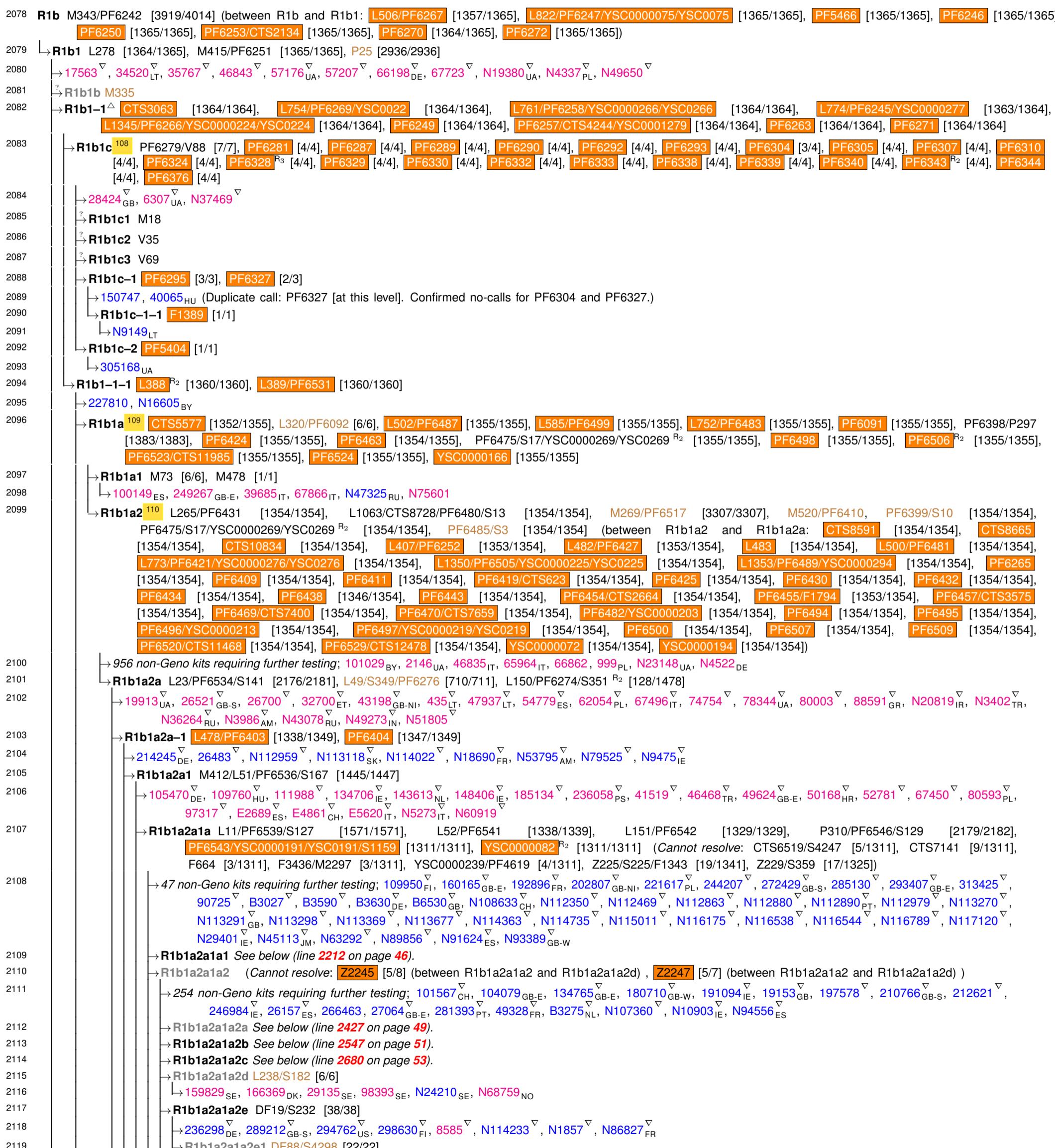
1906	R1a	CTS5164 [211/211], F3650 [206/211], L457/PF6191 [217/217], M420/L146/PF6229 [213/215], M449/L145/PF6175 [215/215], M511/L63/PF6203 [214/214], M513/L62/PF6200 [214/214], M616/F928 <sup>R2</sup> [211/211], M629/F1088/PF6160 [211/211], M662/F1769/PF6179 [211/211], M665/CTS2907 <sup>R2</sup> [211/211], M726/CTS8008 [211/211], M740/CTS8851 [211/211], M745/CTS9596/PF6205 [211/211], M752/F2948/PF7527 [211/211], M775/PF6215 [211/211], M786/CTS10627 [211/211], M794/F3364/PF6222 [211/211], M800/CTS11734/PF6226 [211/211], M803/F3466/PF7534 [211/211], PF6153/F886 [211/211], PF6233/F3570 [211/211]
1907	→ 310205	
1908	→ R1a1	M448/L122/PF6237 [239/239], M459/PF6235 [209/209], M516/L120/PF6236 [2/2], SRY10831.2/PAGE65/PF6234/SRY1532/SRY10831/PAGE65.1 [258/293] (between R1a1 and R1a1a1: CTS11720 [209/209], F3337 [209/209], M617/F947/PF6156 [209/209], M619/F989 [209/209], M622/F1050 [209/209], M626/PF6159 [209/209], M633/F4099 [209/209], M637/PF6165 [209/209], M646/PF6167 [209/209], M649/PF6169 [209/209], M650/PF6170 [209/209], M653/CTS1619/PF6173 [209/209], M668/F1808/PF6181 [209/209], M678/CTS3548 [209/209], M701/F2215/PF6194 [209/209], M704/F2234/PF6195 [209/209], M733/F2684/PF6201 [209/209], M742/F2901/PF6204 [209/209], M753/F2957 [209/209], M757/PF6210 [209/209], M759/PF7540 [209/209], M761/F3159 [209/209], M766/PF6211 [209/209], M769/PF6214 [209/209], M771/F3185 [209/209], M773/F3194 [209/209], M779/PF6216 [209/209], M782/PF6218 [209/209], M798/CTS11411 [209/209], PF6151 [209/209], PF6231/F3551 [209/209], PF7530 [209/209], PF7532/F3398 [209/209], PF7542 [209/209])
1909	└→ R1a1a	L168 <sup>R2</sup> [216/217], L449/PF6223 [13/13], M17 [246/246], M198/PF6238 [531/542], M512/PF6239 [209/209], M514/PF6240 [1/1], M515
1910	→ 173 non-Geno kits requiring further testing; N4203 <sub>MK</sub>	
1911	→ R1a1a1	M417 [310/310], PAGE7/PAGES00007 [210/210] (Cannot resolve: CTS4385/M9837/Z2463 [11/215], F3197/M774 [205/209], F3644/M810 [204/209])
1912	→ 12624 <sub>PL</sub> , 259861 <sub>GB-E</sub> , 65486 <sub>▼</sub> , 7295 <sub>UA</sub> , 73596 <sub>GB</sub> , 74896 <sub>CZ</sub> , 75144 <sub>PL</sub> , 99825 <sub>▼</sub> , N18167 <sub>IE</sub> , N20835 <sub>GB</sub> , N4544 <sub>GR</sub> , N48088 <sub>DE</sub> , N8719 <sub>IT</sub> , N97469 <sub>MD</sub>	
1913	→ R1a1a1a	L664/CTS7083/S298 [35/35]
1914	→ 103641 <sub>BE</sub> , 106186 <sub>IE</sub> , 123302, 129135 <sub>GB-E</sub> , 131656 <sub>DE</sub> , 14769 <sub>▼</sub> , 177070 <sub>▼</sub> , 177896 <sub>IE</sub> , 210992 <sub>IE</sub> , 228797 <sub>GB-S</sub> , 228839 <sub>GB-E</sub> , 26698 <sub>▼</sub> , 268077 <sub>GB-E</sub> , 285021, 43111 <sub>IE</sub> (Unexpected negative call: SRY10831.2- [3 levels above, at R1a1]. Duplicate call: SRY10831.2 [3 levels above, at R1a1.]), 50794 <sub>NL</sub> , 50946 <sub>IE</sub> , 54319 <sub>NO</sub> , 61821 <sub>DE</sub> , 66304 <sub>IE</sub> , 6646 <sub>GB-E</sub> , 94990 <sub>▼</sub> , 97582 <sub>NL</sub> , N116652, N23374 <sub>▼</sub> , N45073 <sub>NO</sub> , N58810 <sub>FR</sub> , N63702 <sub>DE</sub>	
1915	→ R1a1a1a-1	M1923/F3647 [2/2]
1916	→ R1a1a1a-1-1	PF4076 <sup>R2</sup> [1/1]
1917	→ 177925	
1918	→ R1a1a1a-1-2	F3666 <sup>R2</sup> [1/1], PF3123 <sup>R3</sup> [1/1]
1919	→ N112542	
1920	→ R1a1a1a-2	M10383/PF1273 <sup>R2</sup> [1/1]
1921	→ 232223 <sub>IE</sub>	
1922	→ R1a1a1a-3	M1562/F131 <sup>R2</sup> [1/1]
1923	→ N17090 <sub>NO</sub>	
1924	→ R1a1a1a-4	Z411/PF5303 <sup>R2</sup> [1/1]
1925	→ 2374 <sub>GB-E</sub>	
1926	→ R1a1a1a-5	F871 [1/1]
1927	→ N17700 <sub>SE</sub>	
1928	→ R1a1a1a-6	F3682 [1/1]
1929	→ N115143	
1930	→ R1a1a1b	M750/CTS9754/PF6206/Z650 [187/187], Z645/S224/PF6162 [187/187], Z647/S441/PF6158 [187/187], Z649/CTS5508 [187/187], Z651/F3044 [187/187]
1931	→ R1a1a1b1	Z283/PF6217/S339 [172/173]
1932	→ N50360 <sub>GB-E</sub>	
1933	→ R1a1a1b1a	Z282/S198 [165/165]
1934	→ 104058 <sub>SE</sub> , 160159 <sub>DE</sub> , 166219 <sub>GB-E</sub> , 182305 <sub>TR</sub> , 184708, 235339 <sub>GB-E</sub> , 276357 <sub>SE</sub> , 44591 <sub>PL</sub> , 67981 <sub>▼</sub> , N101164 <sub>SE</sub> , N114073 <sub>▼</sub> , N114353 <sub>▼</sub> , N115057 <sub>▼</sub> , N116063 <sub>▼</sub> , N117102 <sub>▼</sub> , N14770 <sub>▼</sub>	

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.<sup>106</sup> CTS7141 also found in nearby clade R1a1a1b1a1b1-2 (line 1949 on this page). One set of instances may be erroneous. Further investigation required.<sup>107</sup> CTS7141 also found in nearby clade R1a1a1b1a1a-1 (line 1939 on this page). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.

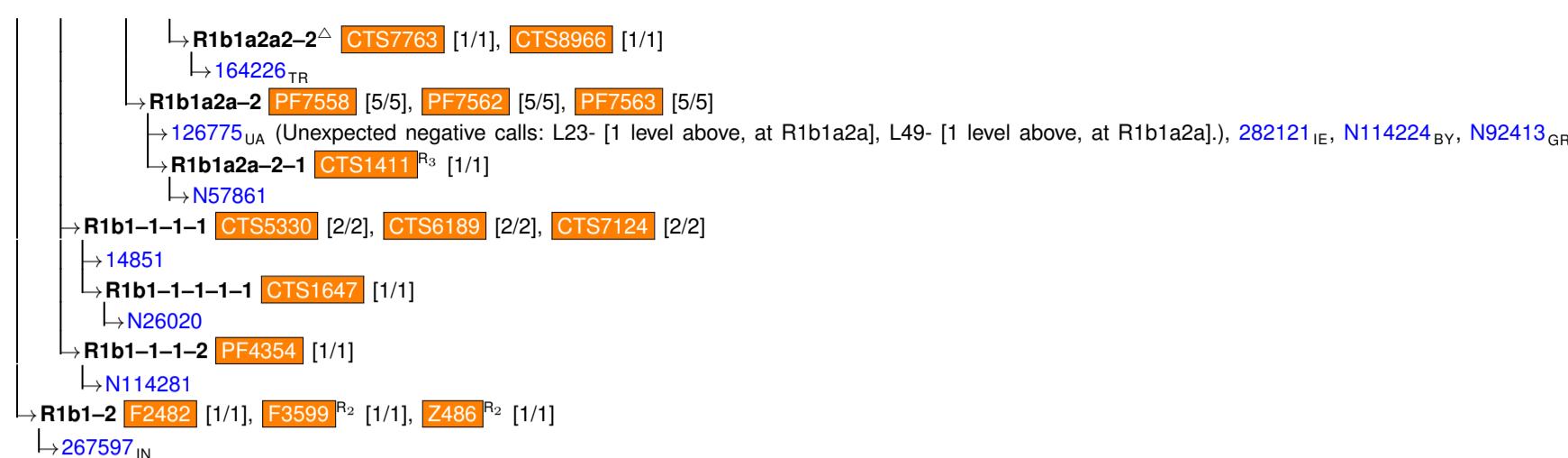
**R1b**

Continued from above (line 352 on page 15)

<sup>108</sup> See here and here for discussion on kit 40065's no-calls.<sup>109</sup> PF6475 also found in nearby clade R1b1a2 (line 2099 on this page). One set of instances may be erroneous. Further investigation required.<sup>110</sup> PF6475 also found in nearby clade R1b1a (line 2096 on this page). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.



Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.**R1b-U106**

Continued from above (line 2109 on page 44)

<sup>114</sup> F2125 also found in nearby clade R1b1a2a1a2a2-1 (line 2527 on page 50). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.

```

2264 |   → R1b1a2a1a1c1a2 DF96/S1809 [14/14]
2265 |   → 111387GB-W, 117323GB-E, 181551, 19095DE, 239336GB-E, 47991GB, 5010GB-E, N113250, N115977BE, N32403GB-E, N35071IE, N46336BE, N74756GB
2266 |   → R1b1a2a1a1c1a2a L1/DYS439-NULL/S26 [19/19]
2267 |   ↳ 1224GB-S, 128017DE, 14179GB-E, 160058HU, 176669GB-S (Unexpected negative call: L132- [22 levels above, at F.], 26557, 34685, 55041, 57020DE, 57059 (Unexpected negative call: L132- [22 levels above, at F.], 65834 (Unexpected negative call: L132- [22 levels above, at F.], 88125GB-S, 91619, 91989, N12019, N15675, N17557, N23494, N5525
2268 |   → R1b1a2a1a1c1a2b P89R2 [1/1], PF4142 [1/1]
2269 |   ↳ 1196 (Duplicate call: P89 [at this level].)
2270 |   → R1b1a2a1a1c1a-1△ CTS7550R2 [1/1]
2271 |   ↳ B2570
2272 |   → R1b1a2a1a1c1a-2△ Z243 [1/1]
2273 |   ↳ 178396DE
2274 |   → R1b1a2a1a1c1a-3△ F1559R4 [1/1]
2275 |   ↳ 265623HU
2276 |   → R1b1a2a1a1c1-1 CTS11337 [3/3]
2277 |   → 252157IE
2278 |   → R1b1a2a1a1c1-1-1 L247/S293R6 [2/2]
2279 |   ↳ N115135, N116483
2280 |   → R1b1a2a1a1c1-2 PF3988R2 [1/1]
2281 |   ↳ 83604GB-E
2282 |   → R1b1a2a1a1c1-3 F3024 [1/1]
2283 |   ↳ 176334
2284 |   → R1b1a2a1a1c1-4 F1668R3 [1/1]
2285 |   ↳ 230038IE
2286 |   → R1b1a2a1a1c2 Z301/S499 [16/217]
2287 |   → 104946IE, 106361, 42776DE, 89750GB, 97148GB-E
2288 |   → R1b1a2a1a1c2a M467/S29/U198 [65/65]
2289 |   ↳ 101996, 102915CH, 107950, 142323GB-E, 161654GB-E, 216423GB-E, 23092GB, 251627GB-E, 254863GB, 26345GB-E, 273969US, 28084GB-E, 28277GB-E, 28504, 287642UA, 3131, 319675, 36642GB-E, 37166, 37279IE, 41540IE, 47928GB-S, 48449GB-E, 49243, 50437DE, 51176, 52928DE, 54363, 57417GB, 57678US, 58299IE, 61445GB-E, 61667, 62503, 6576, 67707GB-E, 6854, 69635GB-E, 69653NL, 79688GB, 80307GB-E, 84371GB-E, 86921, 98442GB-E, B1621, B2998, B3389IE, E8432, N112437, N112612, N112678, N112686, N112770, N112888NL, N112992, N113647, N114583, N115643, N115865DK, N117399, N17493, N38009GB-E, N43178GB-E, N47101DE, N58648GB-E
2290 |   → R1b1a2a1a1c2b L48/S162 [331/332] (Cannot resolve: L47/S170 [92/344])
2291 |   → 109 non-Geno kits requiring further testing; 156977IE, 182162CZ, 212083CH
2292 |   → R1b1a2a1a1c2b1 L47/S170 [92/93] (Cannot resolve: L44/S171 [29/85], L163/S352 [16/48])
2293 |   → 163370GB-E, 17468GB-E, 197485PL, 21447IE, 26383GB, 26815FR, 33424IE, 39187GB-E, 39402GB-E, 4607IE, 46269GB, 50502GB-E, 65593GB, 73131GB-E, 7353LV, 89020GB-E, N29909GB-E, N59994GB-E
2294 |   → R1b1a2a1a1c2b1a L44/S171 [29/59], L163/S352 [16/47]
2295 |   → 105770GB-E, 135435GB-S, 165852CZ, 202816PL, 63444DE, N10888GB, N115487, N37715GB-E, N59000IE
2296 |   → R1b1a2a1a1c2b1a1 L46/S172 [16/47] (Cannot resolve: L525 [6/37])
2297 |   → 115986GB-E, 122771PL, 154926GB-E, 40224GB-E, N20541GB-W
2298 |   → R1b1a2a1a1c2b1a1a L45/S353 [8/39], L164/S502 [12/43], L237 [7/38], L477 [8/38], L493 [8/38]
2299 |   → 131142GB, 160420GB-E, 27477GB-E, 368IE (Unexpected negative call: L46- [1 level above, at R1b1a2a1a1c2b1a1]), 52338GB-E, 68995GB-E, 6997GB-E, 87571, E14888US, N109633IE, N39678GB-E, N80434CZ (Unexpected negative call: L47- [3 levels above, at R1b1a2a1a1c2b1a1])
2300 |   → R1b1a2a1a1c2b1a1a-1 F659R3 [1/1], PF3188R2 [1/1]
2301 |   ↳ 275630
2302 |   → R1b1a2a1a1c2b1a1a-2 Z160 [27/29], Z350 [29/29]
2303 |   → 243843GB-E (Unexpected negative calls: L164- [1 level above, at R1b1a2a1a1c2b1a1a], L44- [3 levels above, at R1b1a2a1a1c2b1a1a]), 250173, 254021, 279574, 280712, 283360GB (Unexpected negative calls: L164- [1 level above, at R1b1a2a1a1c2b1a1a], L46- [2 levels above, at R1b1a2a1a1c2b1a1a], L44- [3 levels above, at R1b1a2a1a1c2b1a1a]), 314310, 42015GB-S, N112848US (Unexpected negative calls: L164- [1 level above, at R1b1a2a1a1c2b1a1a], L46- [2 levels above, at R1b1a2a1a1c2b1a1a], L44- [3 levels above, at R1b1a2a1a1c2b1a1a]), N112928, N113113, N113534, N113890, N114427, N115376, N116914, N117235, N2146GB-S, N64724
2304 |   → R1b1a2a1a1c2b1a1a-2-1 Z159R2 [7/7]
2305 |   ↳ 14584GB-S (Unexpected negative calls: L46- [3 levels above, at R1b1a2a1a1c2b1a1a], L44- [4 levels above, at R1b1a2a1a1c2b1a1a], L163- [4 levels above, at R1b1a2a1a1c2b1a1a]), 169807IE, 230445BY, 70092 (Unexpected negative calls: L46- [3 levels above, at R1b1a2a1a1c2b1a1a], L44- [4 levels above, at R1b1a2a1a1c2b1a1a], L163- [4 levels above, at R1b1a2a1a1c2b1a1a]), 92584GB-E (Unexpected negative calls: L46- [3 levels above, at R1b1a2a1a1c2b1a1a], L44- [4 levels above, at R1b1a2a1a1c2b1a1a], L163- [4 levels above, at R1b1a2a1a1c2b1a1a]), N113456HR, N6478DE (Unexpected negative call: L44- [4 levels above, at R1b1a2a1a1c2b1a1a])
2306 |   → R1b1a2a1a1c2b1a1a-2-2△ CTS3553R2 [2/2]
2307 |   ↳ 232232IT, N112671FR
2308 |   → R1b1a2a1a1c2b1a1a-2-3△ CTS6278 [1/1]
2309 |   ↳ N114273
2310 |   → R1b1a2a1a1c2b1a1a-3 F2691 [1/1]
2311 |   ↳ N116656
2312 |   → R1b1a2a1a1c2b1a1-1 YSC0000292R4 [1/1]
2313 |   ↳ 108880DE
2314 |   → R1b1a2a1a1c2b1a-1 PF2062R8 [2/2]
2315 |   ↳ 1502DE, 215166IE
2316 |   → R1b1a2a1a1c2b1a-2 Z1437/F1219R2 [1/1]
2317 |   ↳ 256676
2318 |   ?→ R1b1a2a1a1c2b1b Z159R2 [18/18]
2319 |   ↳ 115576GB-E, 116432PL, 128737BY, 14540, 158944LT, 16631, 170013GB-E, 38866, 54935UA, 58963DK, 66219, 8767LT, 87813GB-S, 93413RU, N15479SI, N24721IE, N39765GB-E, N7138GB
2320 |   → R1b1a2a1a1c2b1-1△ CTS8749R14 [1/1]
2321 |   ↳ N87649GB-S
2322 |   → R1b1a2a1a1c2b2 Z9/S268 [175/175], Z10/S379 [13/133], Z28 [127/127], Z348 [127/127]
2323 |   → 11104GB-S, 15388GB-E, 2345GB-E, 235324GB-E, 46204SE, 61653GB, 64544GB-E, 98608GB, N114572, N30759SE, N32284FI, N47495GB, N92470NL
2324 |   → R1b1a2a1a1c2b2a Z30/S271 [97/97]
2325 |   ↳ 13269GB, 77378SE, 80752SE, B3600, N29517DE
2326 |   → R1b1a2a1a1c2b2a1 Z2/S511/YSC000044 [111/111]
2327 |   ↳ 115148GB-E, 130242DE, 136477GB-E, 145597GB-E, 146664, 159308GB-E, 175991FR, 180410GB-E, 180985GB, 181729FR, 215807LT, 293719, 45183GB-S, 46804, 51606GB-E, 68000, 87509GB-S, 93372DE, 99520IE, B2312, N116006, N14951BE

```

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.

<sup>115</sup> Need confirmation that Z341=S513 and that Z344=S514. Older versions of the ISOGG tree had Z344=S513, as does [17]. Z341 and Z344 are in close proximity, and such discrepancies cause phylogenetic havoc!

<sup>116</sup> Z332 also found in nearby clade R1b1a2a1a1c2b2b1a1-1 (line 2399 on page 49). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.

2399 |     └→ R1b1a2a1a1c2b2b1a-1-1<sup>117</sup> PF3231<sup>R6</sup> [1/1], Z332/S1746<sup>R2</sup> [1/1]  
 2400 |       └→ N82220<sub>GB-E</sub>  
 2401 |     └→ R1b1a2a1a1c2b2b-1 CTS10126<sup>R2</sup> [1/1]  
 2402 |       └→ 162508<sub>DE</sub>  
 2403 |     └→ R1b1a2a1a1c2b2b-2 F3528 [1/1]  
 2404 |       └→ N116021  
 2405 |     └→ R1b1a2a1a1c2b3 L200 [5/5]  
 2406 |       └→ 125182<sup>▽</sup>, 52078<sup>▽</sup><sub>GB-E</sub>, N55053<sub>CH</sub>, N8166<sub>GB-S</sub>  
 2407 |     └→ R1b1a2a1a1c2b3-1 PF3231<sup>R6</sup> [1/1]  
 2408 |       └→ 214372<sub>GB-S</sub>  
 2409 |     └→ R1b1a2a1a1c2b-1 F1559<sup>R4</sup> [2/2], PF6386 [1/2]  
 2410 |       └→ 275376<sub>GB-E</sub> (Unexpected negative call: L48- [1 level above, at R1b1a2a1a1c2b].), 95390  
 2411 |     └→ R1b1a2a1a1c2b-2 L693<sup>R2</sup> [3/3]  
 2412 |       └→ 153133, 211007<sub>GB-E</sub>, 61053<sub>GB-E</sub>  
 2413 |     └→ R1b1a2a1a1c-1 M323<sup>R2</sup> [2/2]  
 2414 |       └→ 20007<sub>GB-W</sub>, 36042<sub>GB</sub>  
 2415 |     └→ R1b1a2a1a1d L199/PF5371 [2/2]  
 2416 |       └→ 241697<sub>DE</sub>, 63831<sub>NL</sub>  
 2417 |     └→ R1b1a2a1a1-1<sup>△</sup> Z1156/PF2477 [1/1]  
 2418 |       └→ N112936  
 2419 |     └→ R1b1a2a1a1-2<sup>△</sup> M10012/PF856<sup>R3</sup> [1/1]  
 2420 |       └→ N24262<sub>GB-E</sub>  
 2421 |     ?→ R1b1a2a1a1-3<sup>△</sup> M157 [1/1]  
 2422 |       └→ 64509<sub>GB-E</sub>  
 2423 |     ?→ R1b1a2a1a1-4<sup>△</sup> L259/S266 [1/1]  
 2424 |       └→ 72850  
 2425 |     ?→ R1b1a2a1a1-5<sup>△</sup> L5 [1/1]  
 2426 |       └→ 67838<sub>GB-S</sub>

## R1b-DF27

Continued from above (line 2112 on page 44)

2427 R1b1a2a1a2a DF27/S250 [120/121]  
 2428 → 63 non-Geno kits requiring further testing; 128757<sup>▽</sup><sub>FR</sub>, 144416<sup>▽</sup><sub>IE</sub>, 149550<sup>▽</sup><sub>ES</sub>, 163032<sup>▽</sup><sub>GB-E</sub>, 174606<sup>▽</sup><sub>ES</sub>, 214921<sup>▽</sup><sub>DE</sub>, 232302<sup>▽</sup>, 234361<sub>GB-S</sub>, 252516<sup>▽</sup><sub>GB-E</sub>, 277146<sub>IE</sub>, 277935<sub>DE</sub>, 39078<sub>ES</sub>, 4897<sup>▽</sup><sub>GB-W</sub>, 56085<sub>GB</sub>, 59497<sup>▽</sup><sub>IE</sub>, 67405<sub>GB-E</sub>, E14895<sub>IE</sub>, N104559<sub>IT</sub>, N107249<sub>GB-S</sub>, N112478<sub>PT</sub>, N113444<sub>ES</sub>, N34129<sub>IE</sub>, N77159<sup>▽</sup>  
 2429 → R1b1a2a1a2a1 Z195/S227 [101/101], Z196/S355 [73/73]  
 2430 → 115040<sup>▽</sup>, 159531<sub>GB-E</sub>, 168328<sup>▽</sup>, 171444<sup>▽</sup><sub>GB</sub>, 24058<sub>DE</sub>, N44347<sup>▽</sup><sub>GB</sub>, N67378<sup>▽</sup>  
 2431 → R1b1a2a1a2a1b L176/S179<sup>R2</sup> [47/47]  
 2432 → 104828<sup>▽</sup><sub>FR</sub>, 10487<sub>UA</sub>, 107408<sub>GB-E</sub>, 108105<sub>PT</sub>, 158502<sup>▽</sup>, 231541<sup>▽</sup>, 35217<sub>GB-E</sub>, 93234<sub>GB</sub>  
 2433 → R1b1a2a1a2a1b1<sup>118</sup> Z262<sup>R2</sup> [2/24]  
 2434 → 44638  
 2435 → R1b1a2a1a2a1b1a<sup>119</sup> M167/SRY2627 [123/123] (between R1b1a2a1a2a1b1a and R1b1a2a1a2a1b1a-1-1: Z199/S234 [23/23], Z204 [23/23], Z689/CTS4716 [23/23])  
 2436 → 96 non-Geno kits requiring further testing; N31460  
 2437 → R1b1a2a1a2a1b1a-1<sup>120</sup> Z200/S361 [22/22], Z268/S450/Z269 [22/22]  
 2438 → 36912<sub>GB-E</sub>  
 2439 → R1b1a2a1a2a1b1a-1-1 Z202 [20/21], Z203 [21/21], Z264 [21/21], Z266 [21/21]  
 2440 → N114528  
 2441 → R1b1a2a1a2a1b1a-1-1-1 Z205 [18/18]  
 2442 → 26412<sub>GB-E</sub>, N114430, N115641 (Duplicate call: Z202 [1 level above, at R1b1a2a1a2a1b1a-1-1]. Suspected no-call for Z202.)  
 2443 → R1b1a2a1a2a1b1a-1-1-1-1 CTS8289 [13/13]  
 2444 → N14866<sub>ES</sub>  
 2445 → R1b1a2a1a2a1b1a-1-1-1-1-1 Z207/S251 [14/14]  
 2446 → 44804<sup>▽</sup>, 5185  
 2447 → R1b1a2a1a2a1b1a-1-1-1-1-1-1 CTS4299 [12/12]  
 2448 → 23253<sup>▽</sup><sub>FR</sub>, 269922, 62986<sup>▽</sup><sub>FR</sub>, 97633<sub>GB-E</sub>, N112355, N112764, N113329<sub>ES</sub>, N113694<sub>ES</sub>, N114692, N116096, N20811  
 2449 → R1b1a2a1a2a1b1a-1-1-1-1-1-1 PF3634<sup>R3</sup> [1/1]  
 2450 → N38675  
 2451 → R1b1a2a1a2a1b1a-1-1-1-2 M9849/PF742<sup>R2</sup> [1/1]  
 2452 → 154890<sub>IE</sub>  
 2453 → R1b1a2a1a2a1b1a-1-1-1-2 CTS606 [2/2]  
 2454 → N114875, N30601  
 2455 → R1b1a2a1a2a1b1a-1-1-2 Z198/S228<sup>R3</sup> [2/2]  
 2456 → N74352<sub>FR</sub>  
 2457 → R1b1a2a1a2a1b1a-1-1-2-1 CTS3221<sup>R2</sup> [1/1], PF6894<sup>R2</sup> [1/1]  
 2458 → N113296  
 2459 → ?R1b1a2a1a2a1b1a-2 L628 [1/1]  
 2460 → N42387<sub>FR</sub>  
 2461 → R1b1a2a1a2a1b-1<sup>121</sup> Z198/S228<sup>R3</sup> [33/33]  
 2462 → 113391<sub>GB-E</sub>, 209708<sup>▽</sup><sub>GB-E</sub>, 213936<sub>GB-S</sub>, 284636<sub>GB</sub>, 41647<sup>▽</sup><sub>GB-E</sub>, 86995<sup>▽</sup><sub>DE</sub>, B6588, N112351, N114597<sub>GB</sub>, N115425, N3980<sup>▽</sup><sub>ES</sub>, N75535<sub>ES</sub>  
 2463 → R1b1a2a1a2a1b2 L165/S68 [15/15]  
 2464 → 165113, 170048<sub>GB-E</sub>, 27859, 3134, 40331<sub>GB</sub>, 40551, 46281<sub>GB-S</sub>, 47096<sub>GB-S</sub>, 50928<sub>GB-S</sub>, 64253, 65411<sub>GB-S</sub>, 66014<sub>GB-S</sub>, 99027<sub>GB-S</sub>, N115386, N83932<sub>GB-E</sub>

<sup>117</sup> Z332 also found in nearby clade R1b1a2a1a1c2b2b1a1-2 (line 2389 on this page). One set of instances may be erroneous. Further investigation required.

<sup>118</sup> Z262 also found in nearby clade R1b1a2a1a2a1b-1-4 (line 2482 on page 50). One set of instances may be erroneous. Further investigation required.

<sup>119</sup> Z201 results have been discarded. This marker seems to be prone to back-mutations.

Kit N31460 has 1 positive SNP from the R1b1a2a1a2a1b-1-2 level (line 2455 on this page). Further investigation is required.

<sup>120</sup> Kit 36912 has 1 positive SNP from the R1b1a2a1a2a1b-1-2 level (line 2455 on this page). Further investigation is required.

<sup>121</sup> Z198 also found in nearby clade R1b1a2a1a2a1-2 (line 2523 on page 50). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.

2465 → R1b1a2a1a2a1b3 CTS4188 [10/10]  
 2466 → 167763<sup>▽</sup><sub>GB-S</sub>, 174609, 259586<sup>▽</sup><sub>GB-S</sub>, 50004<sup>▽</sup><sub>GB-E</sub>, N112845, N116632  
 2467 → R1b1a2a1a2a1b3-1 Z1146/L797/PF2016<sup>R6</sup> [2/2]  
   → R1b1a2a1a2a1b3-1-1 F672<sup>R5</sup> [1/1]  
     → N114201  
     → R1b1a2a1a2a1b3-1-2 F756<sup>R2</sup> [1/1], PF1285<sup>R2</sup> [1/1], PF1359/V89<sup>R2</sup> [1/1], PF3346<sup>R3</sup> [1/1]  
     → N114116  
   → R1b1a2a1a2a1b3-2 PF2062<sup>R8</sup> [1/1]  
     → 58265  
   → R1b1a2a1a2a1b3-3 L88<sup>R8</sup> [1/1], L421<sup>R2</sup> [1/1], L433<sup>R4</sup> [1/1]  
     → N113440<sub>ES</sub>  
 2476 → R1b1a2a1a2a1b-1-1 CTS7095<sup>R3</sup> [1/1], CTS10855<sup>R2</sup> [1/1]  
   → 238203<sub>GB-E</sub> (Duplicate call: L176 [2 levels above, at R1b1a2a1a2a1b]. Presumed L176+.)  
 2478 → R1b1a2a1a2a1b-1-2 L147<sup>R8</sup> [2/2], PF7217 [1/1]  
   → 171839<sub>GB-NI</sub>, N22555  
 2480 → R1b1a2a1a2a1b-1-3 CTS7079 [1/1], CTS10320 [1/1], PF7510 [1/1]  
   → N112596  
 2482 → R1b1a2a1a2a1b-1-4<sup>122</sup> Z262<sup>R2</sup> [2/2]  
   → 174435<sub>GB-E</sub>, 253563<sub>IE</sub>  
 2484 → R1b1a2a1a2a1b-1-5 PF4161 [1/1]  
   → 272083<sub>SE</sub>  
 2486 → R1b1a2a1a2a1-1<sup>△</sup> Z274/S229 [52/52]  
 2487 → R1b1a2a1a2a1a Z209/S230 [37/37], Z210 [43/43], Z215/S357 [43/43], Z220/S356 [90/90], Z269/S450/Z268 [46/46]  
 2488 → 35 non-Geno kits requiring further testing; 211471, 23193<sub>GB-W</sub>, 266575<sub>DE</sub>, 272381, 289975<sub>ES</sub>, 47849<sub>US</sub>, B1714, B2323<sub>FR</sub>, N112702, N113462, N115358, N117594, N2640<sub>GB-S</sub>, N2876<sub>ES</sub>, N80344<sub>FR</sub>  
 2489 → R1b1a2a1a2a1a-1 Z295/S1217 [26/26]  
 2490 → 74838<sub>GB-E</sub>  
 2491 → R1b1a2a1a2a1a-1-1 Z270/PF7598 [14/14]  
 2492 → 262674<sub>GB-E</sub>  
 2493 → R1b1a2a1a2a1a-1-1-1 Z211/PF7595/S358<sup>R2</sup> [12/12]  
 2494 → 281564<sub>FR</sub>  
 2495 → R1b1a2a1a2a1a1 S8070/CTS12074 [11/11], Z212 [11/11], Z216 [10/18], Z273<sup>R5</sup> [11/11], Z278/S181 [24/24]  
 2496 → 104747<sub>GB-E</sub>, 135403<sup>▽</sup><sub>ES</sub>, 157033<sup>▽</sup><sub>ES</sub>, 189915<sup>▽</sup><sub>GB-S</sub>, 201229<sub>DE</sub>, 28321 (Duplicate call: L176.), 289627<sub>IE</sub>, 29360<sup>▽</sup><sub>GB-S</sub>, 304219<sub>IT</sub>, 78029<sup>▽</sup><sub>ES</sub>, 83343<sup>▽</sup><sub>ES</sub>, N113324<sub>PT</sub>, N58888<sub>GB-E</sub>, N94262  
 2497 → R1b1a2a1a2a1a1a Z214/S348 [11/11] (between R1b1a2a1a2a1a1a and R1b1a2a1a2a1a1a-1: Z299 [5/5])  
 2498 → 115590<sup>▽</sup>, B1595<sup>▽</sup><sub>ES</sub>, B3990<sub>GB-E</sub>, N103224<sup>▽</sup><sub>ES</sub>, N27160<sup>▽</sup><sub>ES</sub>, N34178<sup>▽</sup><sub>ES</sub>  
 2499 → R1b1a2a1a2a1a1a-1 Z279 [4/4]  
 2500 → N50965<sub>FR</sub>  
 2501 → R1b1a2a1a2a1a1a1 M153 [8/8]  
   → 159918<sub>ES</sub>, 71688<sub>ES</sub>, 74765, 76019<sub>ES</sub>, 85359<sub>FR</sub>, E8053, N113609, N66037<sub>ES</sub>  
 2502 → R1b1a2a1a2a1a1a-1-1 L160/PF4013/S184<sup>R3</sup> [1/1], U175<sup>R3</sup> [1/1], Z6/S276/YSC0000048<sup>R2</sup> [1/1]  
 2503 → N8661<sub>ES</sub>  
 2504 → R1b1a2a1a2a1a1a-2 CTS7927 [1/1]  
 2505 → N25134<sub>GB-S</sub>  
 2506 → R1b1a2a1a2a1a1-1 CTS7774 [1/1], CTS10322 [1/1], CTS10571 [1/1], L629 [1/1]  
 2507 → 27539<sub>GB-E</sub>  
 2508 → R1b1a2a1a2a1a-1-2 M2443/PF5535<sup>R4</sup> [1/1]  
 2509 → N115536<sub>GB-E</sub>  
 2510 → R1b1a2a1a2a1a-1-2 Z2355/CTS4065/S1264/L1245<sup>R2</sup> [11/11]  
 2511 → 109279<sub>NL</sub> (Confirmed CTS4065+. Presumed Z295+.), 144165, 208146, 287884<sub>DE</sub>, 298842, 76755<sub>SE</sub>, N112585<sub>GB</sub>, N115807, N117813, N23134  
 2512 → R1b1a2a1a2a1a-1-2-1 L484/M4747/PF7258 [5/5]  
   → 195834<sub>GB</sub>, 217955<sub>US</sub>, 44479<sub>PL</sub>, E11737, N58749<sub>CA</sub>  
 2513 → R1b1a2a1a2a1a-2 M155<sup>R3</sup> [1/1]  
 2514 → N52329  
 2515 → R1b1a2a1a2a1a-3 CTS11067 [1/1], PAGE22/PAGES00022<sup>R2</sup> [1/1], PF3236<sup>R3</sup> [1/1], PF3303 [1/1]  
 2516 → N115093  
 2517 → R1b1a2a1a2a1a-4 PF6565 [1/1]  
 2518 → B6432  
 2519 → R1b1a2a1a2a1c DF17/S455 [9/9], S1307/CTS7768 [12/12]  
 2520 → 104956, 1188<sub>PT</sub>, 162209, 221732<sub>GB-S</sub>, 26772<sub>GB-E</sub>, 287394<sub>IT</sub>, 290717<sub>GB-S</sub>, 89885<sub>DE</sub>, B2669, N116028, N1859, N1993<sub>IE</sub>, N30509<sub>FR</sub>, N3432<sub>DE</sub>, N44337  
 2521 → R1b1a2a1a2a1-2<sup>123</sup> CTS8749<sup>R14</sup> [1/1], Z198/S228<sup>R3</sup> [1/1]  
 2522 → 305133  
 2523 → R1b1a2a1a2a2<sup>124</sup> L617 [1/2]  
 2524 → 5928<sub>GB-E</sub> (Duplicate call: Z274. Presumed PF3236-, Z210-, Z215-, Z220- and Z274-.)  
 2525 → R1b1a2a1a2a2-1<sup>125</sup> CTS11556<sup>R3</sup> [1/1], F2125<sup>R3</sup> [1/1], Z24<sup>R2</sup> [1/1]  
 2526 → N113736 (Unexpected negative calls: L617- [1 level above, at R1b1a2a1a2a2], DF27- [2 levels above, at R1b1a2a1a2a]. Duplicate call: L617 [1 level above, at R1b1a2a1a2a2].)  
 2527 → R1b1a2a1a2a3 L881 [2/2]  
 2528 → 101901<sub>GB-E</sub>, 26020<sub>GB-E</sub>  
 2529 → R1b1a2a1a2a-1<sup>△</sup> F3867<sup>R3</sup> [1/1]  
 2530 → 110924<sub>GB</sub>  
 2531 → R1b1a2a1a2a-2 Z2572/CTS11567 [4/4]  
 2532 → 222323<sub>FR</sub>, 29108, 46496<sub>FR</sub>, N116233  
 2533 → R1b1a2a1a2a-3<sup>△</sup> CTS9952 [2/2]  
 2534 → 227823, 308717

<sup>122</sup> Z262 also found in nearby clade R1b1a2a1a2a1b1 (line 2433 on page 49). One set of instances may be erroneous. Further investigation required.<sup>123</sup> CTS8749 also found in nearby clade R1b1a2a1a2c1f-1 (line 2792 on page 55). Z198 also found in nearby clade R1b1a2a1a2a1b-1 (line 2461 on page 49). One set of instances may be erroneous. Further investigation required.<sup>124</sup> L617 may have a wider scope than this subclade.<sup>125</sup> F2125 also found in nearby clade R1b1a2a1a1b1-2 (line 2234 on page 46). One set of instances may be erroneous. Further investigation required.

2537 → R1b1a2a1a2a-4<sup>△</sup> L194 [1/1]  
 2538 ↳ N2642  
 2539 → R1b1a2a1a2a-5<sup>△</sup> L86<sup>R2</sup> [1/1]  
 2540 ↳ 172132<sub>GB-E</sub> (Duplicate call: L86 [at this level].)  
 2541 → R1b1a2a1a2a-6 DF83 [2/2]  
 2542 ↳ 235308<sub>GB-E</sub>, 4354<sub>GB-S</sub> (Duplicate call: DF27 [1 level above, at R1b1a2a1a2a]. Presumed DF27+.)  
 2543 ?→ R1b1a2a1a2a-7<sup>△</sup> DF81 [2/2]  
 2544 ↳ 16848<sub>ES</sub>, E9720  
 2545 ?→ R1b1a2a1a2a-8<sup>△</sup> L1246/S1285 [1/1], Z2355/CTS4065/S1264/L1245<sup>R2</sup> [1/1]  
 2546 ↳ 125381<sub>GB-E</sub>

**R1b-U152**

Continued from above (line 2113 on page 44)

2547 R1b1a2a1a2b U152/PF6570/S28 [491/491] (Cannot resolve: L2/S139 [306/473])  
 2548 → 84 non-Geno kits requiring further testing; 10814<sub>GB-S</sub>, 130149<sub>GB-E</sub>, 216196<sub>GB-S</sub>, 223929<sub>IT</sub>, 236956<sub>FR</sub>, 255498<sub>NL</sub>, 285324<sub>FR</sub>, 47686<sub>IT</sub>, N112368, N113190, N113476, N115341, N2620<sub>SE</sub>, N42592<sub>IT</sub>, N50337<sub>GB-E</sub>  
 2549 → R1b1a2a1a2b1 L2/S139 [306/309]  
 2550 → 106 non-Geno kits requiring further testing; 125963<sub>GB-E</sub>, 141262<sub>NL</sub>, 141309, 170376<sub>DE</sub>, 171601<sub>DZ</sub>, 184305<sub>IT</sub>, 225559<sub>LT</sub>, 233653<sub>GB-E</sub>, 235978<sub>GB</sub>, 24268<sub>GB-W</sub>, 284610<sub>IT</sub>, 289155<sub>IT</sub>, 314676, 65648<sub>BY</sub>, 89034<sub>NL</sub>, B1238<sub>US</sub>, B3593<sub>IT</sub>, B4978<sub>CZ</sub>, N101983, N113228<sub>GB-W</sub>, N113294<sub>IT</sub>, N113299, N114139<sub>FR</sub>, N114565, N114704<sub>GB-E</sub>, N114738<sub>GB-E</sub>, N114969, N115300, N115359, N115394<sub>IT</sub>, N115612<sub>IE</sub>, N116429, N116942, N4150<sub>DE</sub>, N42923<sub>GB-E</sub>, N60267<sub>ES</sub>, N70631<sub>CH</sub> (Duplicate call: L176.), N90341<sub>IT</sub>  
 2551 → R1b1a2a1a2b1a Z367/S255 [43/44]  
 2552 → N72390<sub>DK</sub>  
 2553 → R1b1a2a1a2b1a1 L20/S144 [72/72], Z383<sup>R2</sup> [24/24], Z384/S492 [18/18]  
 2554 → 53 non-Geno kits requiring further testing; 158733<sub>GB-E</sub> (Unexpected negative call: L2- [2 levels above, at R1b1a2a1a2b1].), 183312, 223650<sub>GB</sub>, N113048, N113862<sub>FR</sub>, N114019, N114697<sub>US</sub>, N115145, N117683, N72607, N88879  
 2555 → R1b1a2a1a2b1a1-1 PF3346<sup>R3</sup> [1/1], Z454<sup>R7</sup> [1/1], Z1146/L797/PF2016<sup>R6</sup> [1/1]  
 2556 ↳ 130274<sub>NO</sub>  
 2557 → R1b1a2a1a2b1a1-2 CTS358/YSC0001270/YSC1270 [1/1], CTS7275 [1/1], CTS8127/YSC0001289/YSC1289 [1/1], L98/S4072 [1/1], L303 [1/1], L763/YSC0268 [1/1], PF121 [1/1], YSC0000081 [1/1]  
 2558 ↳ 217453<sub>GB-E</sub>  
 2559 → R1b1a2a1a2b1a1-3 F1948 [1/1]  
 2560 ↳ N78666  
 2561 → R1b1a2a1a2b1a1-4 M228/L972<sup>R2</sup> [1/1]  
 2562 ↳ N9198<sub>IT</sub> (Duplicate call: M228 [at this level].)  
 2563 → R1b1a2a1a2b1a1-5 CTS11795<sup>R2</sup> [1/1]  
 2564 ↳ 1336<sub>GB-E</sub>  
 2565 → R1b1a2a1a2b1a1-6<sup>126</sup> PF5589<sup>R3</sup> [1/1]  
 2566 ↳ 263135  
 2567 ?→ R1b1a2a1a2b1a1-7<sup>127</sup> Z258/S372<sup>R2</sup> [1/1]  
 2568 ↳ 155835<sub>FR</sub>  
 2569 ?→ R1b1a2a1a2b1a1-8 Z291/S256 [1/1]  
 2570 ↳ 167970  
 2571 → R1b1a2a1a2b1a2 Z34/S368 [11/11]  
 2572 → N1208<sub>GB</sub>, N51030<sub>GB</sub>  
 2573 → R1b1a2a1a2b1a2a Z35/S487<sup>R2</sup> [22/23]  
 2574 → 145336<sub>GB</sub>, 162061<sub>DE</sub>, 182569<sub>FR</sub>, 187214<sub>NL</sub>, 19049<sub>GB-E</sub>, 223432<sub>BE</sub>, 36219<sub>▼</sub>, 46867<sub>GB-E</sub>, 61922<sub>▼</sub>, 6953<sub>▼</sub>, 85332<sub>▼</sub>, N106789<sub>▼</sub>, N16080<sub>PR</sub>, N26047<sub>GB-E</sub>, N28931<sub>GB-E</sub>  
 2575 → R1b1a2a1a2b1a2a1 Z275 [3/3]  
 2576 → 25285<sub>▼</sub>, N50869<sub>ES</sub>  
 2577 → R1b1a2a1a2b1a2a1-1<sup>128</sup> Z276<sup>R2</sup> [1/1]  
 2578 ↳ 187876  
 2579 → R1b1a2a1a2b1a2a-1<sup>129</sup> CTS9044 [3/3], Z259 [3/3], Z276<sup>R2</sup> [4/4]  
 2580 → 179968<sub>NL</sub>, 8343<sub>GB-E</sub> (Unexpected negative call: Z35- [1 level above, at R1b1a2a1a2b1a2a].)  
 2581 → R1b1a2a1a2b1a2a-1-1<sup>130</sup> L1293 [1/1], Z258/S372<sup>R2</sup> [1/1]  
 2582 ↳ 36943<sub>GB-S</sub>  
 2583 → R1b1a2a1a2b1a2a-1-2 M5251/CTS8479/PF1746<sup>R2</sup> [1/1]  
 2584 ↳ H1141<sub>GB-E</sub>  
 2585 → R1b1a2a1a2b1a2a-2<sup>131</sup> F3483<sup>R2</sup> [1/1], M2613/PF5821<sup>R3</sup> [1/1], M3596/PF3068<sup>R4</sup> [1/1], PF735<sup>R2</sup> [1/1], PF2111<sup>R3</sup> [1/1], PF2331<sup>R2</sup> [1/1], PF5589<sup>R3</sup> [1/1], PF7445<sup>R4</sup>  
 2586 ↳ N81364<sub>PL</sub>  
 2587 → R1b1a2a1a2b1b L196 [3/3]  
 2588 ↳ 19736<sub>GB-E</sub>, 203938, N52049<sub>GB-E</sub>  
 2589 → R1b1a2a1a2b1c Z49 [59/59]  
 2590 → 121740<sub>DE</sub>, 14125<sub>GB-E</sub>, 148288<sub>▼</sub>, 156106<sub>BB</sub>, 199841, 223609<sub>GB-E</sub>, 240232<sub>IE</sub>, 258131<sub>DE</sub>, 264772<sub>SE</sub>, 315653, 43837, 64890<sub>▼</sub>, B3175<sub>DE</sub>, E16880, N112541<sub>US</sub>, N113031, N113655, N114468, N116631, N117324, N40919<sub>FR</sub>, N55642<sub>DE</sub>, N71871<sub>CH</sub>, N81973<sub>FR</sub>, N8637<sub>FR</sub>  
 2591 → R1b1a2a1a2b1c1 Z142/S211 [18/28]  
 2592 → 125781<sub>FR</sub>, 134736<sub>FR</sub>, 1370<sub>GB-E</sub>, 142637<sub>HU</sub>, 145421<sub>GB-E</sub>, 172561<sub>▼</sub>, 184173<sub>GB-E</sub>, 203575<sub>▼</sub>, 209585<sub>GB-E</sub>, 249822<sub>GB-E</sub>, 31971<sub>GB</sub>, 6342<sub>GB-E</sub>, 8642<sub>GB-E</sub>, E5562<sub>FR</sub>  
 2593 → R1b1a2a1a2b1c1a Z50/L562/S213 [12/12], Z51/S369 [8/8]  
 2594 → 101133<sub>GB-S</sub>, 224076<sub>US</sub>, 233271<sub>▼</sub>, 73381<sub>GB-S</sub>, N114339<sub>CH</sub>, N90964<sub>GB-E</sub>  
 2595 → R1b1a2a1a2b1c1a-1 Z57/S1468 [5/5]  
 2596 → 206005<sub>GB-E</sub>, B3637<sub>ES</sub>, N116610

<sup>126</sup> PF5589 also found in nearby clade R1b1a2a1a2b1a2a-2 (line 2585 on this page). One set of instances may be erroneous. Further investigation required.

<sup>127</sup> Z258 also found in nearby clade R1b1a2a1a2b1a2a-1-1 (line 2581 on this page). One set of instances may be erroneous. Further investigation required.

<sup>128</sup> Z276 also found in nearby clade R1b1a2a1a2b1a2a-1 (line 2579 on this page). One set of instances may be erroneous. Further investigation required.

<sup>129</sup> Z276 also found in nearby clade R1b1a2a1a2b1a2a1-1 (line 2577 on this page). One set of instances may be erroneous. Further investigation required.

<sup>130</sup> Z258 also found in nearby clade R1b1a2a1a2b1a2a-7 (line 2567 on this page). One set of instances may be erroneous. Further investigation required.

<sup>131</sup> PF5589 also found in nearby clade R1b1a2a1a2b1a1-6 (line 2565 on this page). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.<sup>132</sup> CTS7970 also found in nearby clade R1b1a2a1a2b1c-2 (line 2611 on this page). One set of instances may be erroneous. Further investigation required.<sup>133</sup> PF4004 also found in nearby clade R1b1a2a1a2c-4 (line 2959 on page 57). One set of instances may be erroneous. Further investigation required.<sup>134</sup> CTS7970 also found in nearby clade R1b1a2a1a2b1c1-1 (line 2605 on this page). One set of instances may be erroneous. Further investigation required.<sup>135</sup> PF4955 also found in nearby clade R1b1a2a1a2b1-1 (line 2618 on this page). One set of instances may be erroneous. Further investigation required.<sup>136</sup> PF4874 also found in nearby clade R1b1a2a1a2-2 (line 2134 on page 45). PF4955 also found in nearby clade R1b1a2a1a2b1c-4 (line 2616 on this page). One set of instances may be erroneous. Further investigation required.<sup>137</sup> CTS8749 also found in nearby clade R1b1a2a1a2c1f-1 (line 2792 on page 55). One set of instances may be erroneous. Further investigation required.<sup>138</sup> L69 also found in nearby clade R1b1a2a1a2c1b-10 (line 2730 on page 54). One set of instances may be erroneous. Further investigation required.<sup>139</sup> CTS2687 also found in nearby clade R1b1a2a1a2c1b-3 (line 2736 on page 54). One set of instances may be erroneous. Further investigation required.<sup>140</sup> S47 also found in nearby clade R1b1a2a1a2b3c-3 (line 2666 on page 53). One set of instances may be erroneous. Further investigation required.<sup>141</sup> CTS8749 also found in nearby clade R1b1a2a1a2c1f-1 (line 2792 on page 55). One set of instances may be erroneous. Further investigation required.

```

2663   ↳ N11365
2664   ↳ R1b1a2a1a2b3c-2△ [Z2898/CTS9477]R2 [1/1]
2665   ↳ 270914GB-S
2666   ↳ R1b1a2a1a2b3c-3142 [S47]R2 [1/1]
2667   ↳ 35655FR
2668   → R1b1a2a1a2b-1 [PF6652] [3/3], [Z192/PF6660] [3/3]
2669   → 194748CH
2670   → R1b1a2a1a2b-1-1 [CTS11874] [2/2], [Z194] [2/2]
2671   → 180858, N8217IE
2672   → R1b1a2a1a2b-2 [M6377/F1493]R5 [1/1]
2673   → 231195DE
2674   → R1b1a2a1a2b-3 [CTS7193]R2 [2/2]
2675   → 40733, N4715UA
2676   → R1b1a2a1a2b-4 [PF4363]R2 [3/3]
2677   → 24162GB-E, 28112GB, B1388GB-E
2678   → R1b1a2a1a2b-5 [CTS1821]R2 [1/1]
2679   → N114613ES

```

**R1b-L21**

Continued from above (line 2114 on page 44)

```

2680 R1b1a2a1a2c143 L459 [68/69], M529/L21/S145 [1393/1419], Z290/S461 [557/566] (Cannot resolve: CTS1751/S3666 [4/564], L346 [2/3] (between R1b1a2a1a2c1 and R1b1a2a1a2c1-5), L356 [2/3] (between R1b1a2a1a2c1 and R1b1a2a1a2c1-5), L564 [3/17] (between R1b1a2a1a2c and R1b1a2a1a2c1-5), Z245/S245 [43/43], Z260 [6/6] (no nearby negative results))
2681 → 298 non-Geno kits requiring further testing; 142138▽, 179787▽GB-W, 200487▽GB, 205239▽GB, 213500▽IE, 221266▽GB-W, 233441▽GB-E, 252858▽IE, 253760▽, 258316▽GB-S, 262780▽, 263323▽GB-S, 264132▽US, 265386▽US, 268422▽, 269473▽IE, 269879▽, 271376▽GB-E, 275223▽GB-E, 276389▽, 284858▽, 285322▽GB-S, 36483▽GB, 8128▽, 94428GB, B2976▽, H1035GB-S, N113292▽, N113613▽IE, N113834GB-S, N114148▽, N114284▽, N114319▽, N114428US, N114494▽, N114514▽, N114551▽, N114807▽, N114845▽, N114904▽, N115046▽, N115284▽, N115373▽, N115632▽, N115803▽, N115910▽, N115924▽, N116083▽, N116617▽, N117013▽, N117167▽, N117447▽, N117554▽, N117585▽, N18643▽, N3057GB-W, N36461NO, N60727DE, N64419GB, N80403GB-E, N82291GB, N85024GB
2682 → R1b1a2a1a2c1 DF13/CTS241/S521 [405/405] (Cannot resolve: Z260 [4/4] (no nearby negative results), Z2542/CTS8221 [24/24])
2683 → 97 non-Geno kits requiring further testing; 11143▽GB-E, 113031▽GB-S, 116159▽GB-E, 14197▽IE, 145001▽GB-S, 171804ES, 185703▽, 188325▽IE, 188927▽GB-E, 20180GB-S, 206354▽, 224813US, 235406FR, 26082▽, 270983GB-S, 274385GB-E, 279338IE, 74820GB-S, 79421▽, 82258FR, B2575IE, B3500▽, N103263IE, N112316DE, N112654GB, N112662▽, N113964GB, N114163▽, N37694GB-E, N39788IE, N70599GB-E, N98521IE
2684 → R1b1a2a1a2c1a DF49/S474 [29/29]
2685 → 108812▽GB-E, 117897▽GB-E, 162948▽IE, 181809▽GB-E, 183161▽IE, 192660▽CA, 216031GB-NI, 230120GB-E, 230866▽GB-S, 278878▽, 31795▽IE, 3950▽GB-E, 44126▽IE, 47105▽, 59601▽IE, 86522GB
2686 → R1b1a2a1a2c1a1 DF23/S193 [134/135]
2687 → 107869▽IE, 119874▽, 137235IE, 177202▽, 18917▽FR, 19920GB-S, 203844▽, 286325HU, 39249▽, 41836▽GB, 5155▽GB, 63595IE, 78065▽FR, 79710GB, 97610IE, N103463▽, N105597▽, N10959IE, N113168▽, N115349, N115560IE, N116876▽, N116909▽, N117086▽, N117636▽, N8220IE
2688 → R1b1a2a1a2c1a1a Z2961 [13/13]
2689 → 101343GB-E, 159039IE, 259442GB-E, 73834GB-E, N108400IE, N1871GB, N26284IE, N92711FR
2690 → R1b1a2a1a2c1a1a1 M222/PAGE84/USP9Y+3636/PAGES00084 [389/390] (Cannot resolve: PF1169 [5/93], Z2955/S653 [6/6], Z2962 [5/5], Z2963 [4/4], Z2964 [5/5], Z2970/S637 [4/4], Z2972/S640 [5/5], Z2973/S641 [4/4], Z2988/S651 [5/5])
2691 → 290 non-Geno kits requiring further testing; 118913▽GB-S, 145320IE, 152299IE, 164044▽, 165907▽GB-S, 16646▽IE, 17624IE, 193494▽GB-S, 194619▽, 196682▽, 199859GB, 20081▽, 201623IE, 205699GB-S, 215509IE, 220455US, 227877IE, 229234IE, 229652US, 230303▽, 231979▽, 246349▽, 262388IE, 263423IE, 266313IE, 269091▽, 270957IE, 274329IE, 284431IE, 300386▽, 30771IE, 47582IE, 78699IE, 7874GB-S, 80603IE, 82395IE, 87711▽IE, 88905IE, 8999GB, B3060▽IE, N103465▽, N105614▽, N112356IE, N112471▽, N112505IE, N112691SE, N112723▽, N113724GB-NI, N113738▽, N113849, N113900▽, N114352▽, N114534▽, N114662▽, N114747▽, N114844IE, N115191▽, N115312▽, N115442▽, N115491▽, N116040▽, N116342▽, N116431▽, N18064GB-E, N2231IE, N23504▽, N26529GB-S, N4029GB, N54683▽, N55831▽, N5845IE, N58492IE, N58591FR, N77616▽, N86819IE
2692 → R1b1a2a1a2c1a1a1a DF85/S675 [16/16]
2693 → 11952▽GB-NI, 73271▽, N104491GB-S
2694 → R1b1a2a1a2c1a1a1-1 [CTS655]R2 [1/1], [CTS11991]R3 [1/1] (no nearby negative results), L753/PF6486/YSC0000018R2 [1/1], PF90R2 [1/1] (no nearby negative results), PF5848R2 [1/1] (no nearby negative results), PF5856R2 [1/1] (no nearby negative results), PF5985R2 [1/1] (no nearby negative results), PF6009R3 [1/1] (no nearby negative results), PF6248R2 [1/1] (no nearby negative results), PF6407R2 [1/1] (no nearby negative results), PF6413R2 [1/1] (no nearby negative results), PF6442R2 [1/1] (no nearby negative results), PF6459/S3848R2 [1/1] (no nearby negative results), PF6525R2 [1/1] (no nearby negative results), YSC0000083R2 [1/1], Z2977▽ [1/1] (no nearby negative results), Z2984▽ [1/1] (no nearby negative results)
2695 → 181933IE
2696 → R1b1a2a1a2c1a1a1-2 [DF97] [12/12]
2697 → 192014IE, 197231IE, 204944▽, 251441IE, 29142IE, 31881IE, 36864▽, 37094GB, 6897IE, N115028▽, N64222GB, N7406IE
2698 → R1b1a2a1a2c1a1a1-1 [M1313/F1265]R2 [3/3]
2699 → 227811GB-S, 272418GB-S, 39277GB-S
2700 → R1b1a2a1a2c1a1a1-2 [F3952]R2 [1/1]
2701 → N10119GB
2702 → R1b1a2a1a2c1a1a1-3△ [PF2155/CTS8002]R3 [1/1]
2703 → 76350GB-S
2704 → R1b1a2a1a2c1a1a1-4 [PF3292]R3 [1/1]
2705 → 115365IE
2706 → R1b1a2a1a2c1a1a1-5△ [F1400] [1/1]
2707 → 39109
2708 → R1b1a2a1a2c1a1a1-6 [PF2028]R2 [2/2]
2709 → 73633IE, N112614
2710 → R1b1a2a1a2c1a1a1-1△ [PF4341]R5 [1/1]
2711 → 60163GB-NI

```

<sup>142</sup> S47 also found in nearby clade R1b1a2a1a2b3b (line 2656 on page 52). One set of instances may be erroneous. Further investigation required.

<sup>143</sup> Results for David F Reynolds' blacklisted SNPs downstream of R-L21 have been discarded.

Kit 43525 has 1 positive SNP from the R1b1a2a1a2c1-5 level (line 2929 on page 57). Further investigation is required. Kit 89644 has 1 positive SNP from the R1b1a2a1a2c1j1-1 level (line 2876 on page 56). Further investigation is required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.

2712 → R1b1a2a1a2c1a-2<sup>144</sup> L88<sup>R8</sup> [1/1]  
 2713   └→ 129036<sub>GB-E</sub>  
 2714 → R1b1a2a1a2c1a-3 L302/S464 [1/1], L319<sup>R2</sup> [1/1]  
 2715   └→ 33932<sub>IE</sub>  
 2716 → R1b1a2a1a2c1b L513/DF1/S215/L956 [108/110], Z249/S279 [48/49]  
 2717 → 32 non-Geno kits requiring further testing; 151979<sub>GB-S</sub>, 188436, 197401<sub>IE</sub>, 210379<sub>GB-S</sub>, 215816, 228009<sub>IE</sub>, 233289<sub>IE</sub>, 259768<sub>IE</sub>, 272920<sub>IE</sub>, 290187<sub>BB</sub>, 299244<sub>IE</sub>, 41466<sub>IE</sub>, 52669<sub>GB-W</sub>, 53712<sub>IE</sub>, 56277, H1601<sub>IE</sub>, N113124<sub>GB-S</sub>, N115037<sub>GB-E</sub>, N117466<sub>IE</sub>, N1946<sub>GB</sub>, N28178<sub>GB-S</sub>, N43622  
 2718 → R1b1a2a1a2c1b2 L193/S176 [35/35]  
 2719   └→ 130361, 144090<sub>GB-NI</sub>, 159822<sub>GB-S</sub>, 167431<sub>GB-S</sub>, 168189<sub>GB-S</sub>, 168205<sub>GB-S</sub>, 170832, 175327<sub>GB-S</sub>, 177505<sub>GB-S</sub>, 177897<sub>IE</sub>, 179378<sub>GB-S</sub>, 190210<sub>GB-S</sub>, 211338<sub>GB-S</sub>, 213029<sub>IE</sub>, 268319<sub>GB-NI</sub>, 29753<sub>GB-S</sub>, 37870<sub>GB-S</sub>, 38271<sub>GB-E</sub>, 39200<sub>GB-S</sub>, 44265<sub>GB-S</sub>, 46029, 46951, 47786<sub>GB-NI</sub>, 55229<sub>GB-NI</sub>, 65397, 83065<sub>GB-S</sub>, 90340<sub>GB-S</sub>, 9139<sub>IE</sub>, 98112<sub>GB-S</sub>, N113002, N114028, N115019, N19218<sub>GB</sub>, N49123<sub>GB-S</sub>, N9932<sub>GB-S</sub>  
 2720 → R1b1a2a1a2c1b3 L706 [2/2]  
 2721   └→ 219571<sub>GB-W</sub>  
 2722 → R1b1a2a1a2c1b3a L705/S465 [7/7]  
 2723   └→ 193851 (Duplicate call: L705 [at this level].), 202969 (Duplicate call: L705 [at this level].), 35532 (Duplicate call: L705 [at this level].), 35601<sub>GB-W</sub> (Duplicate call: L705 [at this level].), 82655<sub>US</sub> (Duplicate call: L705 [at this level].), N29541<sub>SE</sub> (Duplicate call: L705 [at this level].), N54638<sub>GB-W</sub> (Duplicate call: L705 [at this level].)  
 2724 → R1b1a2a1a2c1b4 CTS3087 [10/10]  
 2725   └→ 131998<sub>DE</sub>, 234631, 235940<sub>IE</sub>, 4479<sub>IE</sub>, 71380<sub>GB-E</sub>, 95499<sub>GB-E</sub>, N112468<sub>IE</sub>, N114377, N116471, N83227<sub>US</sub>  
 2726 → R1b1a2a1a2c1b-1<sup>△</sup> CTS6942 [4/4], CTS11744 [4/4]  
 2727   └→ 231066, 58568<sub>IE</sub>  
 2728 → R1b1a2a1a2c1b-1-1 CTS6621 [2/2]  
 2729   └→ N115079, N84867<sub>US</sub>  
 2730 → R1b1a2a1a2c1b-10<sup>145</sup> L69/S163/PF2681<sup>R7</sup> [17/17] (between R1b1a2a1a2c1b and R1b1a2a1a2c1b)  
 2731   └→ 115223<sub>IE</sub>, 143742<sub>IE</sub>, 197737<sub>IE</sub>, 227667<sub>IE</sub>, 228829<sub>IE</sub>, 246556, 274410<sub>IE</sub>, 30991<sub>IE</sub>, 31237<sub>IE</sub>, 38430<sub>GB-E</sub>, 39420<sub>GB-S</sub> (Unexpected negative call: L513- [1 level above, at R1b1a2a1a2c1b].), N109246<sub>IE</sub>, N2051<sub>IE</sub>, N88205  
 2732 → R1b1a2a1a2c1b1 P66 [3/3]  
 2733   └→ 184039, 31293<sub>US</sub>, 60586<sub>IE</sub>  
 2734 → R1b1a2a1a2c1b-2 CTS11795<sup>R2</sup> [1/1]  
 2735   └→ 228772<sub>GB-E</sub>  
 2736 → R1b1a2a1a2c1b-3<sup>146</sup> CTS2687<sup>R2</sup> [1/1]  
 2737   └→ 272519<sub>SE</sub>  
 2738 → R1b1a2a1a2c1b-4<sup>△</sup> P53<sup>R6</sup> [1/1]  
 2739   └→ N112802  
 2740 → R1b1a2a1a2c1b-5<sup>△</sup> Z1867/CTS6161/PF4857<sup>R3</sup> [1/1]  
 2741   └→ N114296<sub>JM</sub>  
 2742 → R1b1a2a1a2c1b-6<sup>△</sup> L387<sup>R2</sup> [1/1]  
 2743   └→ N88177<sub>GB-S</sub>  
 2744 → R1b1a2a1a2c1b-7<sup>△</sup> M1391/F2338<sup>R2</sup> [1/1]  
 2745   └→ 230107<sub>GB-S</sub>  
 2746 → R1b1a2a1a2c1b-8<sup>△</sup> F3817<sup>R2</sup> [1/1]  
 2747   └→ N115945  
 2748 → R1b1a2a1a2c1b-9<sup>△</sup> L577 [1/1]  
 2749   └→ 27274<sub>GB-S</sub>  
 2750 → R1b1a2a1a2c1c L96 [3/3]  
 2751   └→ 73550, 94156<sub>IE</sub>  
 2752 → R1b1a2a1a2c1c-1 L168<sup>R2</sup> [1/1]  
 2753   └→ 176268<sub>FR</sub>  
 2754 → R1b1a2a1a2c1d L144/S175 [6/6], L195/S354 [5/5]  
 2755   └→ 130084, 168985<sub>GB-E</sub>, 55192<sub>IE</sub>, 57993<sub>GB-W</sub>, 83115<sub>IE</sub>, 98399<sub>IE</sub>  
 2756 → R1b1a2a1a2c1e Z255/S219 [36/36]  
 2757   └→ 100136, 10359<sub>IE</sub>, 12757<sub>IE</sub>, 174037<sub>IE</sub>, 203904<sub>IE</sub>, 249509<sub>IE</sub>, 273539<sub>GB-E</sub>, 28645<sub>IE</sub>, 286789<sub>IE</sub>, 36028<sub>IE</sub>, 49867<sub>GB-S</sub>, 64633<sub>IE</sub>, 74904<sub>IE</sub>, N101540, N113095<sub>IE</sub>, N113683<sub>IE</sub>, N4697<sub>IE</sub>  
 2758 → R1b1a2a1a2c1e1 L159/S169<sup>R2</sup> [49/49]  
 2759   └→ 41 non-Geno kits requiring further testing; 206460<sub>IE</sub>, 262052<sub>AU</sub>, 33100<sub>GB-E</sub>, 88224<sub>GB</sub>, N2871<sub>IE</sub>, N38274<sub>GB-NI</sub>, N47848<sub>GB</sub>  
 2760   └→ R1b1a2a1a2c1e-1 CTS655<sup>R2</sup> [1/1], CTS11991<sup>R3</sup> [1/1] (no nearby negative results), L753/PF6486/YSC0000018<sup>R2</sup> [1/1], PF90<sup>R2</sup> [1/1] (no nearby negative results), PF5848<sup>R2</sup> [1/1] (no nearby negative results), PF5856<sup>R2</sup> [1/1] (no nearby negative results), PF5985<sup>R2</sup> [1/1] (no nearby negative results), PF6009<sup>R3</sup> [1/1] (no nearby negative results), PF6248<sup>R2</sup> [1/1] (no nearby negative results), PF6407<sup>R2</sup> [1/1] (no nearby negative results), PF6413<sup>R2</sup> [1/1] (no nearby negative results), PF6414<sup>R2</sup> [1/1] (no nearby negative results), PF6417<sup>R2</sup> [1/1] (no nearby negative results), PF6428<sup>R2</sup> [1/1] (no nearby negative results), PF6442<sup>R2</sup> [1/1] (no nearby negative results), PF6459/S3848<sup>R2</sup> [1/1] (no nearby negative results), PF6525<sup>R2</sup> [1/1] (no nearby negative results), YSC0000083<sup>R2</sup> [1/1]  
 2761   └→ 185218<sub>IE</sub>  
 2762 → R1b1a2a1a2c1e-1<sup>△</sup> F1636<sup>R4</sup> [1/1], F111<sup>R4</sup> [1/1]  
 2763   └→ N114085<sub>GB-S</sub>  
 2764 → R1b1a2a1a2c1e-2<sup>△</sup> F3305 [1/1]  
 2765   └→ 249841<sub>GB-E</sub>  
 2766 → R1b1a2a1a2c1f Z253/S218 [135/135]  
 2767   └→ 28 non-Geno kits requiring further testing; 140541<sub>GB-E</sub>, 169385, 172277<sub>IE</sub>, 174932<sub>GB-NI</sub>, 219373<sub>GB-E</sub>, 266497<sub>FR</sub>, 298065<sub>IE</sub>, 46265<sub>IE</sub>, N112446<sub>IE</sub>, N112497<sub>GB-S</sub>, N112667<sub>IE</sub>, N112731<sub>IE</sub>, N112887<sub>ZA</sub>, N113306<sub>CO</sub>, N114096<sub>IE</sub>, N114178<sub>IE</sub>, N114630<sub>IE</sub>, N114887<sub>GB-E</sub>, N115529<sub>IE</sub>, N115835<sub>IE</sub>, N11635<sub>IE</sub>, N117381<sub>IE</sub>, N117835<sub>IE</sub>, N20431<sub>IE</sub>, N53331<sub>GB</sub>, N65344<sub>GB-S</sub>, N69355<sub>IE</sub>, N76424<sub>IE</sub>, N85391  
 2768 → R1b1a2a1a2c1f1 L554 [3/3]  
 2769   └→ 21435, 23996<sub>GB-E</sub>, 278812<sub>GB-E</sub>  
 2770 → R1b1a2a1a2c1f2 S686, Z2534/S868 [16/16]  
 2771   └→ 115596<sub>GB-S</sub>, 146819<sub>GB-E</sub>, 233265<sub>FR</sub>, 290162<sub>FR</sub>, 41327<sub>GB-E</sub>, 63623<sub>GB-E</sub>, 81795<sub>GB-E</sub>, N93033<sub>ES</sub>  
 2772 → R1b1a2a1a2c1f2a L226/S168<sup>R3</sup> [42/42]  
 2773   └→ 10420, 11144, 112620, 122577, 123519, 127414, 130351<sub>IE</sub>, 163350<sub>GB-E</sub>, 164407, 174394<sub>GB-E</sub>, 183282<sub>IE</sub>, 184259, 190465<sub>IE</sub>, 190796, 194697, 25505, 27143, 29530, 46800, 48596, 50373<sub>IE</sub>, 55369<sub>IE</sub>, 56031<sub>IE</sub>, 57501, 58280<sub>IE</sub>, 58423, 61777<sub>IE</sub>, 65404, 69433, 72419<sub>GB-S</sub>, 77349<sub>US</sub>, 82328, 93878, N112917<sub>IE</sub>, N114237, N117537, N13807, N22536<sub>GB</sub>, N25784<sub>IE</sub>, N54074<sub>IE</sub>, N56434<sub>IE</sub>, N60944<sub>IE</sub>

<sup>144</sup> L88 also found in nearby clade R1b1a2a1a2c1f2c-2 (line 2786 on page 55). One set of instances may be erroneous. Further investigation required.<sup>145</sup> L69 also found in nearby clade R1b1a2a1a2b1-8 (line 2632 on page 52). One set of instances may be erroneous. Further investigation required.<sup>146</sup> CTS2687 also found in nearby clade R1b1a2a1a2b2-6 (line 2648 on page 52). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.<sup>147</sup> L88 also found in nearby clade R1b1a2a1a2c1a-2 (line 2712 on page 54). One set of instances may be erroneous. Further investigation required.<sup>148</sup> CTS8749 also found in nearby clade R1b1a2a1a2a1-2 (line 2523 on page 50). CTS8749 also found in nearby clade R1b1a2a1a2b1-2 (line 2620 on page 52). CTS8749 also found in nearby clade R1b1a2a1a2b3c-1 (line 2662 on page 52). One set of instances may be erroneous. Further investigation required.<sup>149</sup> Z454 also found in nearby clade R1b1a2a1a2c1l-1 (line 2894 on page 56). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.

2844 → ? R1b1a2a1a2c1g3 L720/S299 [2/2]  
 2845   └→ 140820<sub>GB-S</sub>, 53766  
 2846 → ? R1b1a2a1a2c1g4 S424, S426  
 2847   └→ R1b1a2a1a2c1g4a S190/CTS2187, S308, S309, S427  
 2848 → R1b1a2a1a2c1g5 L130 [3/3]  
 2849   └→ 208214, 256210<sub>IE</sub>, 268412<sub>IE</sub>  
 2850 → R1b1a2a1a2c1g-1<sup>△</sup> F3103 [1/1]  
 2851   └→ N117038  
 2852 → R1b1a2a1a2c1g-2<sup>△</sup> L641 [1/1], L642 [1/1]  
 2853   └→ 26411  
 2854 → R1b1a2a1a2c1g-3<sup>△</sup> L1336 [5/5]  
 2855   └→ 149586<sub>GB-NI</sub>, 219855<sub>US</sub>, 91126, N112443<sub>IE</sub>, N82445<sub>IE</sub>  
 2856 → R1b1a2a1a2c1h L371/S300 [7/7]  
 2857   └→ 10060<sub>GB-W</sub>, 143379, 16717<sub>GB-W</sub>, 183121, 254530<sub>GB-W</sub>, 36039<sub>IE</sub>, N84982<sub>AU</sub>  
 2858 → R1b1a2a1a2c1i DF41/CTS6581/S524 [26/26], S836/CTS2501 [14/15]  
 2859   └→ 127884<sup>▽</sup><sub>GB-S</sub>, 1503<sup>▽</sup><sub>GB-S</sub>, 176148<sup>▽</sup><sub>IE</sub>, 191733<sup>▽</sup><sub>GB-E</sub> (Duplicate call: L176.), 21647<sup>▽</sup>, 240201<sub>GB-S</sub>, 250145<sup>▽</sup><sub>GB</sub>, 29705<sub>GB-S</sub> (Duplicate call: L319.), 35550<sup>▽</sup><sub>IE</sub>, 4500<sup>▽</sup><sub>GB-NI</sub>, 47694<sup>▽</sup><sub>GB-S</sub>, 59080<sup>▽</sup><sub>GB</sub>, 63274<sub>GB-NI</sub>, 78799<sub>GB</sub>, 85107<sup>▽</sup>, 92380<sub>IE</sub>, 96950<sub>GB-S</sub>, 99735<sub>SE</sub>, B2895<sup>▽</sup>, N114320<sup>▽</sup>, N76583  
 2860 → R1b1a2a1a2c1i1 L744/S388 [14/14], L745/S463 [15/15], L746/S310 [14/14]  
 2861   └→ 115205<sub>GB-S</sub>, 143035<sub>GB-NI</sub>, 147822<sub>GB-S</sub>, 16895, 35963<sub>GB</sub>, 40333<sub>GB-S</sub>, 48747, 52758<sub>GB-S</sub>, 53238, 5603, 57979<sub>GB-S</sub>, 5987, 75703, E15052, N53630<sub>GB-S</sub>  
 2862 → ? R1b1a2a1a2c1i2 L563 [2/2]  
 2863   └→ 181546, 35212<sub>GB</sub>  
 2864 → R1b1a2a1a2c1i-1<sup>△</sup> YSC0000292<sup>R4</sup> [2/2]  
 2865   └→ 142395<sub>IE</sub>, 52965<sub>FR</sub>  
 2866 → R1b1a2a1a2c1i-2<sup>△</sup> CTS11440 [1/1]  
 2867   └→ 57001<sub>GB</sub>  
 2868 → R1b1a2a1a2c1i-3<sup>△</sup> PF6093 [1/1]  
 2869   └→ 53479  
 2870 → R1b1a2a1a2c1i-4<sup>△</sup> PF4634<sup>R2</sup> [1/1]  
 2871   └→ 17609<sub>IE</sub>  
 2872 → R1b1a2a1a2c1j Z251/S470 [10/10]  
 2873   └→ 109174, 139697<sub>GB</sub>, 187172<sub>GB-E</sub>, 231656<sup>▽</sup>, 236075<sub>GB-E</sub>, 24273, 29523<sub>GB-S</sub>, 89888<sup>▽</sup><sub>GB-S</sub>  
 2874 → R1b1a2a1a2c1j1 L555/S393 [5/5], L557/S394 [5/5]  
 2875   └→ N114612  
 2876 → ? R1b1a2a1a2c1j1-1 L561 [4/4]  
 2877   └→ 22874<sub>GB-S</sub>, 260850<sub>GB-S</sub>, 3874<sub>IE</sub>, 65048<sub>GB-NI</sub>  
 2878 → ? R1b1a2a1a2c1j-1 L583 [1/1]  
 2879   └→ 193834<sub>BY</sub>  
 2880 → R1b1a2a1a2c1k L1335/S530 [59/59]  
 2881   └→ 112391<sup>▽</sup>, 14006<sup>▽</sup><sub>GB-W</sub>, 19706<sub>GB-W</sub>, 228773<sup>▽</sup><sub>GB-W</sub>, 36081<sup>▽</sup><sub>NO</sub>, 65511<sup>▽</sup><sub>IE</sub>, 66126<sup>▽</sup><sub>GB-S</sub>, 84796<sup>▽</sup><sub>GB-S</sub>, 85335<sup>▽</sup><sub>GB-S</sub>, 94892<sup>▽</sup><sub>GB-S</sub>, 95769<sup>▽</sup>, N68552<sup>▽</sup><sub>GB-S</sub>  
 2882 → R1b1a2a1a2c1k1 CTS6838 [47/47], L1065/CTS11722/S749 [73/73], S735/CTS7030 [46/46]  
 2883   └→ 25 non-Geno kits requiring further testing: 100137<sup>▽</sup><sub>GB-S</sub>, 106378<sup>▽</sup><sub>GB-S</sub>, 107327<sup>▽</sup><sub>GB-E</sub>, 143812<sub>GB-S</sub>, 145698<sup>▽</sup><sub>GB-NI</sub>, 18444<sup>▽</sup>, 190435<sup>▽</sup>, 191228<sup>▽</sup><sub>GB-S</sub>, 241056<sup>▽</sup><sub>GB-S</sub>, 258447, 260814<sup>▽</sup><sub>GB-S</sub>, 28273, 284854<sup>▽</sup><sub>IE</sub>, 285203<sup>▽</sup><sub>GB-S</sub>, 288024<sup>▽</sup>, 297431<sup>▽</sup>, 308487<sup>▽</sup><sub>DE</sub>, 323962<sup>▽</sup>, 36198<sub>GB-S</sub> (Duplicate calls: L159, L176, M64.), 57711<sub>GB-S</sub>, 95886<sub>GB-S</sub>, B1047<sub>US</sub>, H1084<sub>GB-S</sub>, N104752<sub>GB-S</sub>, N104906<sub>US</sub>, N113960<sup>▽</sup>, N114709<sup>▽</sup>, N115263<sup>▽</sup>, N115903<sup>▽</sup>, N117018<sup>▽</sup>, N16473<sub>GB</sub>, N25121<sub>GB-S</sub>, N31582<sub>GB-S</sub>, N36830, N44383<sub>GB-NI</sub>, N5620<sub>SE</sub>, N5647<sub>GB-S</sub>, N75305<sub>GB-E</sub>  
 2884 → R1b1a2a1a2c1k1a L743 [7/7]  
 2885   └→ 166440<sub>GB-S</sub>, 197448<sub>GB-S</sub>, 197929<sub>GB-S</sub>, 227382<sub>GB-S</sub>, 270944<sub>GB-S</sub>, 63127<sub>GB-S</sub>, 9548<sub>GB-S</sub>  
 2886 → R1b1a2a1a2c1k1-1 CTS11556<sup>R3</sup> [1/1]  
 2887   └→ 230483<sub>US</sub>  
 2888 → R1b1a2a1a2c1k1-2<sup>△</sup> CTS6601<sup>R2</sup> [1/1]  
 2889   └→ 48641<sub>GB-S</sub>  
 2890 → R1b1a2a1a2c1k1-3<sup>△</sup> PF5236 [1/1]  
 2891   └→ 287689<sub>GB-S</sub>  
 2892 → R1b1a2a1a2c1l<sup>150</sup> S1136/CTS4466<sup>R2</sup> [64/65] (Cannot resolve: CTS3974 [15/15] (between R1b1a2a1a2c1 and R1b1a2a1a2c1), CTS8358/Z3022 [14/14] (no nearby negative results), F2517 [2/46] (no nearby negative results))  
 2893   └→ 127820<sub>IE</sub>, 14409<sup>▽</sup>, 158068<sub>IE</sub>, 191515<sup>▽</sup><sub>GB-NI</sub>, 194663<sup>▽</sup>, 213449<sub>IE</sub>, 249476, 253758<sub>IE</sub>, 256982<sub>IE</sub>, 352<sup>▽</sup>, 42048<sup>▽</sup><sub>IE</sub>, 73128, 75798<sup>▽</sup><sub>IE</sub>, N115171  
 2894 → R1b1a2a1a2c1l-1<sup>151</sup> Z454<sup>R7</sup> [2/2]  
 2895   └→ 214080<sub>IE</sub>, 251695<sub>IE</sub>  
 2896 → R1b1a2a1a2c1l-2 L247/S293<sup>R6</sup> [1/1]  
 2897   └→ 121376<sub>GB-NI</sub>  
 2898 → R1b1a2a1a2c1l-3<sup>152</sup> S1137/CTS5714<sup>R3</sup> [44/47]  
 2899 → R1b1a2a1a2c1l1 L270<sup>R2</sup> [8/38]  
 2900   └→ 187530<sub>GB-E</sub>, 56835<sub>IE</sub>, 83039<sup>▽</sup><sub>IE</sub>  
 2901 → R1b1a2a1a2c1l1-1<sup>153</sup> S1137/CTS5714<sup>R3</sup> [43/44]  
 2902   └→ 12 non-Geno kits requiring further testing: 101204<sub>IE</sub>, 108108<sub>IE</sub>, 112325<sub>IE</sub>, 115485<sub>IE</sub>, 12294<sub>IE</sub>, 136639, 148516<sub>IE</sub>, 154255<sub>IE</sub>, 169169<sub>IE</sub>, 179653<sub>IE</sub>, 195090<sub>GB-W</sub>, 196206<sub>IE</sub>, 196882<sub>IE</sub>, 202133<sub>IE</sub>, 202783, 21418<sub>GB-S</sub>, 229625<sub>IE</sub> (Duplicate call: PF112.), 239517<sub>GB-E</sub>, 244292<sub>IE</sub>, 262511, 284952<sub>IE</sub> (Unexpected negative call: L270- [1 level above, at R1b1a2a1a2c1l1].), 286308<sub>IE</sub>, 290447, B1114, B1159<sub>IE</sub>, B1983, B2560<sub>GB-NI</sub> (Duplicate call: CTS5714 [2 levels above, at R1b1a2a1a2c1l-3]. Suspected no-call for CTS5714.), B5288<sub>IE</sub>, N116635, N45540, N59178<sub>IE</sub>  
 2903 → R1b1a2a1a2c1l1-1-1 F2517 [1/1]  
 2904   └→ 102091  
 2905 → R1b1a2a1a2c1l-3-1 Z87/S201<sup>R2</sup> [1/1]  
 2906   └→ 282358<sub>IE</sub>

<sup>150</sup> S1136 also found in nearby clade R1b1a2a1a2c1-4 (line 2919 on page 57). One set of instances may be erroneous. Further investigation required.

The expert opinion is that CTS5714 and F2517 are prone to no-calls on the Geno 2.0 chip and are for the moment phylogenetically equivalent to CTS4466; see the R1b-L21 project group's discussion.

<sup>151</sup> Z454 also found in nearby clade R1b1a2a1a2c1g2a-1 (line 2842 on page 55). One set of instances may be erroneous. Further investigation required.<sup>152</sup> S1137 also found in nearby clade R1b1a2a1a2c1-4 (line 2919 on page 57). One set of instances may be erroneous. Further investigation required.<sup>153</sup> S1137 also found in nearby clade R1b1a2a1a2c1-4 (line 2919 on page 57). One set of instances may be erroneous. Further investigation required.

Version: 7 February 2014; see <http://Ytree.MorleyDNA.com> for latest.

2907 → R1b1a2a1a2c1m CTS2457<sup>R2</sup> [4/4]  
 2908 ↳ 159823<sub>IE</sub>, 159824<sub>IE</sub>, 96153<sub>IE</sub>, N112842<sub>IE</sub>  
 2909 → R1b1a2a1a2c1-1 Z2542/CTS8221 [19/19] (between R1b1a2a1a2c and R1b1a2a1a2c1)  
 2910 ↳ 115893<sup>▼</sup><sub>GB-E</sub>, 16114<sub>GB-S</sub>, 179426<sup>▼</sup><sub>GB-W</sub>, 186947<sup>▼</sup><sub>GB-E</sub>, 198135<sub>FR</sub>, 227117<sup>▼</sup><sub>GB-S</sub>, 26059, 30949<sub>GB-E</sub>, 365<sup>▼</sup><sub>US</sub>, E5945<sub>FR</sub> (Duplicate call: L159.), N76898<sup>▼</sup><sub>GB</sub>, N8772<sub>GB-NI</sub>  
 2911 → R1b1a2a1a2c1n L147<sup>R3</sup> [1/1], L679 [1/1], M11115/F110<sup>R3</sup> [1/1]  
 2912 ↳ 170191<sub>GB</sub>  
 2913 → R1b1a2a1a2c1-1-1<sup>△</sup> CTS3386 [8/8]  
 2914 ↳ 184529, 194063, 196841<sub>IE</sub>, 251710<sub>IE</sub> (Duplicate call: Z2542 [1 level above, at R1b1a2a1a2c1-1]. Presumed Z2542+.), 313755, N113768, N114672, N117431  
 2915 → R1b1a2a1a2c1-1-2<sup>△</sup> L580 [1/1]  
 2916 ↳ 173880<sub>GB-E</sub>  
 2917 → R1b1a2a1a2c1-1-3<sup>△</sup> L1314 [1/1], L1315 [1/1]  
 2918 ↳ 173877<sub>GB-E</sub>  
 2919 →? R1b1a2a1a2c1-1-4<sup>△</sup> 154 CTS3974 [1/1], S1136/CTS4466<sup>R2</sup> [1/1], S1137/CTS5714<sup>R3</sup> [1/1], Z3022/CTS8358 [1/1] (no nearby negative results)  
 2920 ↳ 210257<sub>DK</sub>  
 2921 →? R1b1a2a1a2c1-1-5<sup>155</sup> L1068/PF6264/YSC0000223<sup>R2</sup> [1/1] (no nearby negative results)  
 2922 ↳ N55408  
 2923 → R1b1a2a1a2c1-2<sup>△</sup> PF88<sup>R2</sup> [1/1], PF3434<sup>R2</sup> [1/1]  
 2924 ↳ 131334<sub>PR</sub>  
 2925 → R1b1a2a1a2c1-3<sup>△</sup> PF5191<sup>R2</sup> [1/1]  
 2926 ↳ 289737<sub>GB-E</sub>  
 2927 → R1b1a2a1a2c1-4<sup>△</sup> L596/PF6907/S292<sup>R2</sup> [1/1]  
 2928 ↳ 24567<sub>GB-S</sub>  
 2929 →? R1b1a2a1a2c1-5<sup>△</sup> L344<sup>R2</sup> [1/1]  
 2930 ↳ 9875  
 2931 → R1b1a2a1a2c2 DF63/CTS300/S522 [20/20]  
 2932 ↳ 174395<sup>▼</sup><sub>GB-S</sub>, 191950<sub>GB-S</sub>, 208171<sub>GB-S</sub>, 229499<sub>FR</sub>, 232541<sub>ES</sub>, 284784<sub>NL</sub>, 31903<sup>▼</sup>, 36886<sup>▼</sup><sub>GB-E</sub>, 8042<sup>▼</sup><sub>GB</sub>, N11946<sup>▼</sup><sub>GB-S</sub>, N90495<sup>▼</sup><sub>GB-E</sub>  
 2933 → R1b1a2a1a2c2a S3689/CTS6919 [8/8]  
 2934 ↳ 172350<sub>IE</sub>, 188353<sub>GB-NI</sub>, 49976<sub>GB-E</sub>, 54798<sub>GB-E</sub>, N110523<sub>DE</sub>, N51736<sub>GB-S</sub>, N66966<sub>FR</sub>, N76446<sub>GB-NI</sub>  
 2935 → R1b1a2a1a2c2-1 F3901 [1/1]  
 2936 ↳ 14713<sub>GB-S</sub>  
 2937 → R1b1a2a1a2c-1<sup>△</sup> F672<sup>R5</sup> [2/2], L582<sup>R2</sup> [2/2], L618<sup>R3</sup> [2/2], M3596/PF3068<sup>R4</sup> [1/2], M5308/PF2552<sup>R2</sup> [1/2], M5525/PF1795<sup>R2</sup> [2/2], PF1585 [1/2], PF3236<sup>R3</sup> [2/2], PF3606<sup>R2</sup>  
     [2/2], Z1146/L797/PF2016<sup>R6</sup> [2/2]  
 2938 ↳ N117240  
 2939 → R1b1a2a1a2c-1-1<sup>156</sup> CTS8340<sup>R3</sup> [1/1], F1255<sup>R2</sup> [1/1], F974<sup>R2</sup> [1/1], F111<sup>R4</sup> [1/1], F1559<sup>R4</sup> [1/1], PF2177<sup>R3</sup> [1/1], PF7445<sup>R4</sup> [1/1]  
 2940 ↳ 273775<sub>CA</sub>  
 2941 → R1b1a2a1a2c-10<sup>△</sup> M8748/CTS2759 [1/1]  
 2942 ↳ 37201<sub>GB-E</sub>  
 2943 → R1b1a2a1a2c-11<sup>△</sup> Z481 [1/1]  
 2944 ↳ N117785  
 2945 → R1b1a2a1a2c-12<sup>△</sup> F2481 [1/1]  
 2946 ↳ N115490  
 2947 → R1b1a2a1a2c-13<sup>△</sup> CTS5713 [1/1]  
 2948 ↳ 295787  
 2949 → R1b1a2a1a2c-14<sup>△</sup> F774<sup>R4</sup> [1/1]  
 2950 ↳ 285041<sub>IE</sub>  
 2951 →? R1b1a2a1a2c-15<sup>△</sup> L1333 [1/1]  
 2952 ↳ 125313  
 2953 →? R1b1a2a1a2c-16<sup>△</sup> L526 [1/1], L1406 [1/1], L1408 [1/1]  
 2954 ↳ 64047<sub>RO</sub>  
 2955 → R1b1a2a1a2c-2<sup>△</sup> PF3634<sup>R3</sup> [1/1]  
 2956 ↳ 82797  
 2957 → R1b1a2a1a2c-3<sup>△</sup> F157<sup>R2</sup> [1/1]  
 2958 ↳ N113249  
 2959 → R1b1a2a1a2c-4<sup>157</sup> PF4004/P37<sup>R6</sup> [1/1]  
 2960 ↳ N69669<sub>GB</sub>  
 2961 → R1b1a2a1a2c-5<sup>△</sup> F2083<sup>R2</sup> [1/1]  
 2962 ↳ N114433  
 2963 → R1b1a2a1a2c-6<sup>△</sup> CTS8137 [1/1]  
 2964 ↳ N116353  
 2965 → R1b1a2a1a2c-7<sup>△</sup> L1444 [1/1], PF7379 [1/1]  
 2966 ↳ 3204<sub>GB-S</sub>  
 2967 → R1b1a2a1a2c-8<sup>△</sup> Z117 [2/2]  
 2968 ↳ 23704, N40691<sub>GB</sub>  
 2969 → R1b1a2a1a2c-9<sup>△</sup> PF4612/CTS10858<sup>R2</sup> [1/1]  
 2970 ↳ N115267

<sup>154</sup> S1136 also found in nearby clade R1b1a2a1a2c1l (line 2892 on page 56). S1137 also found in nearby clade R1b1a2a1a2c1l-3 (line 2898 on page 56). S1137 also found in nearby clade R1b1a2a1a2c1l-1 (line 2901 on page 56). One set of instances may be erroneous. Further investigation required.<sup>155</sup> L1068 also found in nearby clade R1b1a2a1a2e1-1 (line 2126 on page 45). One set of instances may be erroneous. Further investigation required.<sup>156</sup> CTS8340, F1255 and PF2177 also found in nearby clade R1b1a2a1a-5 (line 2160 on page 45). One set of instances may be erroneous. Further investigation required.<sup>157</sup> PF4004 also found in nearby clade R1b1a2a1a2b1c-1 (line 2607 on page 52). One set of instances may be erroneous. Further investigation required.