

FORENSIC SCIENCES

AC I H F D D AC :D

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A compendium of human mitochondrial DNA (mtDNA) control region types has been constructed. This updated compilation indexes over 10,000 population-specific mtDNA nucleotide sequences in a standardized format. The sequences represent mtDNA types from the Scientific Working Group on DNA Analysis Methods (SWGAM) mtDNA database and from the public literature. The SWGDAM data are considered to be of higher quality than the public data, particularly for counting the number of times a particular haplotype has been observed.

K d : s s r ; s s ; DN ; DN ( DN )-( 13 )-1 ( s s s r ; s

A survey of sequences from the published literature and the sequence databases GenBank and EMBL was conducted (Table 1). The mtDNA nucleotide sequence data contributed to the authors for inclusion in the original concordance and contributions to SWGDAM are also included. All sequence information is included in the compilation.

The SWGDAM data contain sequences for nucleotide positions (np) for both HV1 (np 16024-16365) and HV2 (np 73-340) for each individual. Sequence data are described as those sites that are different from the Cambridge Reference Sequence (CRS) (82).

All sequences are compiled by continent and country of origin and numbered according to a standard 14 character ("XXX.XXX.XXXXX") format (Table 2). In this format, the first three characters identify the continent/country of origin. All country codes are the official country code designations published by the United Nations (86) and are text characters. For example, DEU defines Germany, and ESP defines Spain. Three zeros ("000") are used in this field to identify sequences that cannot be attributed to a particular country.

The next three characters identify the population (Table 3). These characters can be either text or numeric. Text identifies major population groups generally used by law enforcement agen-

from individuals residing in territories that are governed by other countries, the first three characters identify the country in political control and the next three identify the people living in the territory. For example, the Polynesian people of New Britain in Melanesia are identified by "area code" 315. However, the island belongs politically to the United Kingdom. Therefore, the first sequence in a series from this group is identified "GBR.315.000001".

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A total of 10,828 mtDNA sequences were obtained: 4,142 from SWGDAM and 6,686 from the published literature/EMBL and GenBank (Table 1). Other tabular information includes provenance, number of populations, number of mtDNA types per population, sequence range, and contributing author.

Miller et al (6) previously reported that when compiling data from a number of sources inconsistencies may arise. During data collection, a few substitutions in some published and SWGDAM sequences were clearly reviewed to be anomalous. When problems were suspected, authors were contacted and asked to confirm their nucleotide sequence. Usually, minor sequence errors were corrected with the author's assistance. However, there are instances with the public literature data where an author has not yet responded to our requests or has asked that an incorrectly reported substitution not be corrected until the laboratory could publish an erratum. Those requests have been honored. However, the following disclaimer has been added to the published data: "This compendium of human mtDNA control region types is compiled from nucleotide sequence data available in the public domain. Every attempt has been made by the editors to ensure the accuracy of the data provided herein. However, some inaccuracies and inconsistencies may exist in the literature. It is possible that some errors still remain. The authors do not acFot possible

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| Region/<br>country                 | Population         | Identification<br>code | No. | Nucleotide<br>positions<br>used | Ref. | Region/<br>country | Population  | Identification<br>code | No. | Nucleotide<br>positions<br>used | Ref. |
|------------------------------------|--------------------|------------------------|-----|---------------------------------|------|--------------------|-------------|------------------------|-----|---------------------------------|------|
| Africa                             |                    |                        |     |                                 |      | Zambia             | ND          | ZMB.AFR                | 1   | 16048-16569; 15<br>1-41         |      |
| Algeria                            | Ghardaia           | DZA.AFR                | 78  | 16090-16370                     | 10   | Zimbabwe           | ND          | ZWE.AFR                | 1   | 16048-16569; 15<br>1-41         |      |
| Benin                              | ND <sup>a</sup>    | BEN.AFR                | 13  | 16190-16370                     | 11   | America, North     |             |                        |     |                                 |      |
| Botswana                           | Herero             | BWA.337                | 20  | 16204-16381;<br>63-374          | 12   | Belize             | Carib       | BLZ.345                | 28  | 16067-16344                     | 24   |
| Central<br>African<br>Republic     | Mbuti<br>Pygmy     | CAF.320                | 5   | 71-270                          | 13   | Canada             | Bella Coola | CAN.030                | 22  | 16024-16383                     | 25   |
| Central<br>African<br>Republic     | ND                 | CAF.320                | 19  | 16024-16381;<br>63-374          | 14   | Canada             | Bella Coola | CAN.030                | 4   | 16030-16370                     | 26   |
| Central<br>African<br>Republic     | ND                 | CAF.AFR                | 10  | 16028-16569;<br>1-41            | 15   | Canada             | Haida       | CAN.080                | 18  | 16024-16383                     | 25   |
| Democratic<br>Republic of<br>Congo | ND                 | COD.AFR                | 1   | 16028-16569;<br>1-41            | 15   | Canada             | ND          | 1602                   |     |                                 |      |
| Eastern<br>Senegal                 | Niokolo<br>Madenka | SEN.327                | 119 | 16024-16368;<br>64-375          | 16   |                    |             |                        |     |                                 |      |
| Egypt                              | Ancient<br>people  | EGY.ANC                | 1   | 16210-16254                     | 17   |                    |             |                        |     |                                 |      |
| Egypt                              | ND                 | EGY.AFR                | 24  | 16024-16365;<br>73-340          | *b   |                    |             |                        |     |                                 |      |
| Guinea,<br>Equatorial              | Bubi               | GNQ.325                | 50  | 16024-16383                     | 18   |                    |             |                        |     |                                 |      |
| Guinea,<br>Subsaharan              | ND                 | GIN.334                | 11  | 15997-16339                     | 19   |                    |             |                        |     |                                 |      |
| Ivory Coast                        | ND                 | IVC.AFR                | 1   | 16086-16519                     | 15   |                    |             |                        |     |                                 |      |
| Kenya                              | ND                 | KEN.AFR                | 1   | 16086-16519                     | 15   |                    |             |                        |     |                                 |      |
| Malawi                             | ND                 | MWI.AFR                | 7   | 16082-16353;<br>64-324          | 20   |                    |             |                        |     |                                 |      |
| Morocco                            | Rif<br>Mountains   | MAR.332                | 18  | 15997-16399                     | 19   |                    |             |                        |     |                                 |      |
| Namibia                            | Kung!              | NAM.336                | 25  | 16024-16381;<br>63-374          | 12   |                    |             |                        |     |                                 |      |
| Niger                              | Ancient<br>peoples | NER.ANC                | 2   | 16037-16420                     | 21   |                    |             |                        |     |                                 |      |
| Niger                              | Bantu-<br>speaking | NER.318                | 24  | 16082-16353;<br>64-324          | 20   |                    |             |                        |     |                                 |      |
| Nigeria                            | ND                 | NGA.AFR                | 1   | 16086-16519                     | 15   |                    |             |                        |     |                                 |      |
| Nigeria                            | ND                 | NGA.AFR                | 7   | 16024-16389                     | 22   |                    |             |                        |     |                                 |      |
| Nigeria                            | Yoruban            | NGA.007                | 14  | 16024-16381;<br>63-374          | 12   |                    |             |                        |     |                                 |      |
| ND                                 | Mbanderu           | BWA.342                | 7   | 16024-16381;<br>63-374          | 14   |                    |             |                        |     |                                 |      |
| ND                                 | Naron              | BWA.341                | 1   | 16024-16381;<br>63-374          | 14   |                    |             |                        |     |                                 |      |
| ND                                 | ND                 | 000.AFR                | 3   | 16086-16519                     | 15   |                    |             |                        |     |                                 |      |
| Sierra Leone                       | ND                 | SKE.AFR                | 110 | 16024-16365;<br>73-340          | *b   |                    |             |                        |     |                                 |      |
| South Africa                       | Biaka              | ZAF.314                | 18  | 16024-16381;<br>63-374          | 23   |                    |             |                        |     |                                 |      |
| South Africa                       | Biaka              | ZAF.314                | 5   | 71-270                          | 13   |                    |             |                        |     |                                 |      |
| South Africa                       | Nguni              | ZAF.310                | 14  | 71-270                          | 13   |                    |             |                        |     |                                 |      |
| South Africa                       | ND                 | ZAF.CAU                | 1   | 16048-16569;<br>1-41            | 15   |                    |             |                        |     |                                 |      |
| South Africa                       | San                | ZAF.311                | 14  | 71-270                          | 13   |                    |             |                        |     |                                 |      |
| South Africa                       | Sotho-<br>Tswana   | ZAF.312                | 22  | 71-270                          | 13   |                    |             |                        |     |                                 |      |
| South Africa                       | Tsonga             | ZAF.313                | 14  | 71-270                          | 13   |                    |             |                        |     |                                 |      |
| Tanzania                           | Hazda              | TZA.343                | 17  | 16024-16381;<br>63-374          | 12   |                    |             |                        |     |                                 |      |
| Uganda                             | ND                 | UGA.AFR                | 1   | 16048-16569;<br>1-41            | 15   |                    |             |                        |     |                                 |      |

| Region/<br>country  | Population                                  | Identification<br>code | No. | Nucleotide<br>positions<br>used | Ref. | Region/<br>country | Population   | Identification<br>code | No. | Nucleotide<br>positions<br>used | Ref. |
|---------------------|---|------------------------|-----|---------------------------------|------|--------------------|--------------|------------------------|-----|---------------------------------|------|
| Brazil              | Krahoa                                      | BRA.304                | 3   | 16030-16370                     | 26   | Korea, South       | ND           | KOR.ASN                | 64  | 16086-16519                     | 46   |
| Brazil              | Surucucu,<br>Catrimani                      | BRA.299                | 50  | 16003-16393;<br>30-396          | 42   | Krygyzstan         | Kirghiz      | KGZ.ASN                | 96  | 16024-16383                     | 51   |
| Brazil              | Ticuna                                      | BRA.344                | 3   | 16030-16370                     | 26   | Laos               | Hmong        | LAO.ASN                | 1   | 16190-16370                     | 11   |
| Brazil              | Yanomama                                    | BRA.299                | 3   | 16030-16370                     | 26   | Malaysia           | ND           | MYS.ASN                | 1   | 16217-16261                     | 11   |
| Columbia            | Ancient<br>People                           | COL.ANC                | 6   | 16049-16401                     | 43   | Malaysia           | ND           | MYS.ASN                | 6   | 71-270                          | 13   |
| Tristan da<br>Cunha | Indigenous                                  | GBR.340                | 5   | 15996-16401;<br>29-408          | 44   | Malaysia           | Sabah        | MYS.ASN                | 36  | 16064-16375                     | 45   |
| Venezuela           | ND  | VEN.338                | 1   | 16030-16370                     | 26   | Mongolia           | ND           | MNG.ASN                | 83  | 16020-16400                     | 53   |
| Asia                |   |                        |     |                                 |      | ND                 | ND           | 000.ASN                | 13  | 71-270                          | 13   |
| Cambodia            | ND  | KHM.ASN                | 12  | 71-270                          | 13   | ND                 | ND           | 000.ASN                | 14  | 16024-16381;<br>63-374          | 12   |
| China               | Hong Kong                                   | CHN.ASN                | 20  | 16024-16400                     | 31   | ND                 | ND           | 000.ASN                | 23  | 16024-16389;                    |      |
| China               | ND  | CHN.ASN                | 2   | 16024-16381;<br>63-374          | 14   | Indonesia          | 000.A56-3723 |                        |     |                                 |      |
| China               | ND  | CHN.ASN                | 4   | 16086-16519                     | 15   | Malaysia           | Sabah        |                        |     |                                 |      |
| China               | ND  | CHN.ASN                | 1   | 16190-16370                     | 11   |                    |              |                        |     |                                 |      |
| China               | ND  | CHN.ASN                | 16  | 71-270                          | 13   |                    |              |                        |     |                                 |      |
| China               | Taiwan                                      | CHN.ASN                | 34  | 16064/16189-<br>16375           | 45   |                    |              |                        |     |                                 |      |
| China               | Taiwan                                      | CHN.ASN                | 6   | 16030-16370                     | 26   |                    |              |                        |     |                                 |      |
| China               | Taiwan                                      | CHN.ASN                | 1   | 16024-16381                     | 14   |                    |              |                        |     |                                 |      |
| China               | Taiwan                                      | CHN.ASN                | 65  | 16048-16569;<br>1-41            | 46   |                    |              |                        |     |                                 |      |
| China               | Taiwan                                      | CHN.ASN                | 28  | 16024-16390                     | 47   |                    |              |                        |     |                                 |      |
| China               | Siberia                                     | CHN.306                | 1   | 16030-16370                     | 26   |                    |              |                        |     |                                 |      |
| India               | Karnataka,<br>Kerala:<br>Havik              | IND.CAU                | 48  | 15997-16401;<br>29-408          | 48   |                    |              |                        |     |                                 |      |
| India               | Kumtata-<br>luka: Murki                     | IND.CAU                | 50  | 15997-16401;<br>29-408          | 48   |                    |              |                        |     |                                 |      |
| India               | ND  | IND.CAU                | 1   | 16086-16519                     | 15   |                    |              |                        |     |                                 |      |
| Indonesia           | Moluccas<br>and Nusa<br>Tenggara<br>Islands | IDN.ASN                | 27  | 16024-16395                     | 49   |                    |              |                        |     |                                 |      |
| Indonesia           | ND  | IDN.ASN                | 1   | 16086-16519                     | 15   |                    |              |                        |     |                                 |      |
| Indonesia           | ND  | IDN.ASN                | 1   | 16024-16381                     | 23   |                    |              |                        |     |                                 |      |
| Indonesia           | ND  | IDN.ASN                | 7   | 16190-16370                     | 11   |                    |              |                        |     |                                 |      |
| Japan               | Chiose                                      | JPN.ASN                | 1   | 16190-16379                     | 15   |                    |              |                        |     |                                 |      |
| Japan               | Kano  | JPN.ASN                | 3   | 16190-16379                     | 15   |                    |              |                        |     |                                 |      |
| Japan               | ND  | JPN.ASN                | 163 | 16024-16365;<br>73-340          | *b   |                    |              |                        |     |                                 |      |
| Japan               | ND  | JPN.ASN                | 1   | 16024-16381;<br>63-374          | 23   |                    |              |                        |     |                                 |      |
| Japan               | ND  | JPN.ASN                | 100 | 16024-16399;<br>56-373          | 50   |                    |              |                        |     |                                 |      |
| Japan               | ND  | JPN.ASN                | 62  | 16048-16569;<br>1-41            | 15   |                    |              |                        |     |                                 |      |
| Japan               | ND  | JPN.ASN                | 1   | 16190-16370                     | 11   |                    |              |                        |     |                                 |      |
| Japan               | ND  | JPN.ASN                | 19  | 71-270                          | 13   |                    |              |                        |     |                                 |      |
| Japan               | Ryukyu/<br>Okinawa                          | JPN.ASN                | 50  | 16190-16379                     | 15   |                    |              |                        |     |                                 |      |
| Japan               | Suttu                                       | JPN.ASN                | 2   | 16190-16379                     | 15   |                    |              |                        |     |                                 |      |
| Japan               | Taka  | JPN.ASN                | 3   | 16190-16379                     | 15   |                    |              |                        |     |                                 |      |
| Japan               | Toda  | JPN.ASN                | 1   | 16190-16379                     | 15   |                    |              |                        |     |                                 |      |
| Japan               | Urawa                                       | JPN.ASN                | 1   | 16190-16379                     | 15   |                    |              |                        |     |                                 |      |
| Kazakhstan          | Kazakh                                      | KAZ.ASN                | 55  | 16024-16383                     | 51   |                    |              |                        |     |                                 |      |
| Kazakhstan          | Uighurs                                     | KAZ.ASN                | 54  | 16024-16383                     | 51   |                    |              |                        |     |                                 |      |
| Korea               | ND  | KOR.ASN                | 182 | 16024-16365;<br>73-340          | *b   |                    |              |                        |     |                                 |      |
| Korea               | ND  | KOR.ASN                | 4   | 16030-16370                     | 52   |                    |              |                        |     |                                 |      |
| Korea               | ND  | KOR.ASN                | 3   | 16086-16519                     | 15   |                    |              |                        |     |                                 |      |
| Korea               | ND  | KOR.ASN                | 2   | 71-270                          | 13   |                    |              |                        |     |                                 |      |

Table 1. Continued...

| Region/<br>country                       | Population                      | Identification<br>code | No. | Nucleotide<br>positions<br>used | Ref.                  | Region/<br>country             | Population                         | Identification<br>code | No.     | Nucleotide<br>positions<br>used | Ref.        |    |
|--|---------------------------------|------------------------|-----|---------------------------------|-----------------------|--------------------------------|------------------------------------|------------------------|---------|---------------------------------|-------------|----|
| Germany                                  | Caucasian                       | DEU.CAU                | 107 | 16090-16365                     | 60                    | Turkey                         | Western<br>Region                  | TUR.CAU                | 22      | 16090-16365                     | 60          |    |
| Germany                                  | Neanderthal                     | DEU.NED                | 1   | 16023-16400                     | 66                    | UK                             | Cambridge<br>Reference<br>Sequence | GBR.CRS                | 1       | All                             | 82          |    |
| Greece                                   | ND                              | GRC.CAU                | 1   | 16024-16409                     | 67                    | UK                             | Caucasian                          | GBR.CAU                | 5       | 16086-16519                     | 15          |    |
| Iceland                                  | Caucasian                       | ISL.CAU                | 39  | 16024-16383                     | 61                    | UK                             | Caucasian                          | GBR.CAU                | 100     | 16024-16400; 83,<br>30-394      | 83,         |    |
| Iceland                                  | Caucasian                       | ISL.CAU                | 14  | 16069-16365                     | 60                    | UK                             | Cornwall                           | GBR.CAU                | 20      | 16024-16324; 59<br>63-322       | 59          |    |
| Iceland                                  | Caucasian                       | ISL.CAU                | 21  | 16024-16324;<br>63-322          | 59                    | UK                             | Cornwall                           | GBR.CAU                | 50      | 16069-16365                     | 60          |    |
| Italy                                    | Caucasian                       | ITA.CAU                | 21  | 106-357                         | 68                    | UK                             | Glasgow                            | GBR.CAU                | 3       | 16020-16478; 84<br>84-327       | 84          |    |
| Italy                                    | Sardinia                        | ITA.CAU                | 46  | 16024-16409                     | 67                    | UK                             | Hebrides                           | GBR.CAU                | 19      | 16024-16324; 59<br>63-322       | 59          |    |
| Italy                                    | South Tyrol<br>and Trentino     | ITA.CAU                | 62  | 16024-16383                     | 69                    | UK                             | Northern<br>Ireland                | GBR.CAU                | 37      | 16024-16324; 59<br>63-322       | 59          |    |
| Italy                                    | Tuscany                         | ITA.CAU                | 47  | 16051-16362;<br>57-319          | 70                    | UK                             | Northumber<br>land                 | GBR.CAU                | 19      | 16024-16324; 59<br>63-322       | 59          |    |
| Netherlands                              | Caucasian                       | NLD.CAU                | 1   | 16048-16569;<br>1-41            | 15                    | UK                             | Orkney<br>Islands                  | GBR.CAU                | 89      | 16024-16324; 59<br>63-322       | 59          |    |
| Norway                                   | Caucasian                       | NOR.CAU                | 30  | 16024-16324;<br>63-322          | 71                    | UK                             | Wales                              | GBR.CAU                | 92      | 16090-16365                     | 60          |    |
| Norway                                   | Saami                           | NOR.CAU                | 197 | 15997-16401                     | 71                    | Oceania                        | Cook Islands                       | ND                     | COK.317 | 79                              | 16189-16375 | 45 |
| ND                                       | Caucasian                       | 000.CAU                | 107 |                                 | 13 <sup>c</sup>       | Marques                        | Polynesian                         | FRA.317                | 19      | 16189-16375                     | 45          |    |
| ND                                       | Saami                           | 000.CAU                | 100 | 15997-16401                     | 61                    | Marshall<br>Islands            | ND                                 | MHL.317                | 5       | 16189-16375                     | 45          |    |
| Portugal                                 | Caucasian                       | PRT.CAU                | 40  | 16090-16370                     | 10                    | Melanesia                      | New Britain                        | GBR.315                | 2       | 16192-16420                     | 34          |    |
| Portugal                                 | Caucasian                       | PRT.CAU                | 30  | 16090-16365                     | 60                    | Micronesia                     | Kapingamar<br>angi                 | FSM.316                | 16      | 16189-16375                     | 45          |    |
| Russia                                   | Evenk and<br>Tungus             | RUS.307                | 11  | 16030-16370                     | 26                    | Micronesia                     | Kosrae<br>(Caroline<br>Islands)    | FSM.316                | 1       | 16192-16420                     | 34          |    |
| Russia                                   | Itel'men                        | RUS.321                | 46  | 16000-16525                     | 73                    | ND                             | Polynesian                         | FRA.317                | 3       | 16189-16375                     | 45          |    |
| Russia                                   | Karelian                        | RUS.CAU                | 83  | 16024-16383                     | 61                    | ND                             | Yap                                | FSM.316                | 1       | 16192-16420                     | 34          |    |
| Russia                                   | Koryk                           | RUS.324                | 147 | 16000-16525                     | 73                    | Papua New<br>Guinea            | Highland                           | PNG.339                | 3       | 16190-16370                     | 11          |    |
| Russia                                   | Nivkh                           | RUS.308                | 2   | 16030-16370                     | 26                    | Papua New<br>Guinea            | ND                                 | PNG.339                | 19      | 16024-16381; 23<br>63-374       | 23          |    |
| Russia                                   | Romanov                         | RUS.CAU                | 11  | 16020-16400;<br>48-408          | 74                    | Papua New<br>Guinea            | ND                                 | PNG.339                | 23      | 16024-16595                     | 49          |    |
| Russia                                   | Udegey                          | RUS.309                | 3   | 16030-16370                     | 26                    | Papua New<br>Guinea            | ND                                 | PNG.339                | 1       | 16086-16519                     | 15          |    |
| Russia                                   | Volga                           | RUS.CAU                | 34  | 16024-16383                     | 61                    | Papua New<br>Guinea            | ND                                 | PNG.339                | 9       | 16164/16189-<br>16375           | 45          |    |
| Saudi<br>Arabia,<br>Israel, and<br>Yemin | Bedouins,<br>Arabs, and<br>Jews | 000.MLE                | 39  | 16024-16409                     | 67                    | Samoa,<br>American             | ND                                 | WSM.317                | 24      | 16024-16395; 49<br>41-401       | 49          |    |
| Spain                                    | Andalusia                       | ESP.CAU                | 15  | 16090-16370                     | 10                    | Samoa,<br>American             | ND                                 | WSM.317                | 17      | 16190-16370                     | 11          |    |
| Spain                                    | Basques                         | ESP.CAU                | 45  | 16024-16383                     | 75                    | Samoa,<br>American             | Savai'i land<br>Upola              | WSM.317                | 24      | 16064-16375                     | 45          |    |
| Spain                                    | Basques                         | ESP.CAU                | 42  | 16090-16370                     | 10                    | Sao Tome<br>Society<br>Islands | Bioko Island                       | STPAFR                 | 95      | 16024-16383                     | 18          |    |
| Spain                                    | Basques                         | ESP.CAU                | 55  | 16069-16365                     | 60                    | Society<br>Islands             | Polynesian                         | FRA.317                | 1       | 16192-16420                     | 34          |    |
| Spain                                    | Canary<br>Islands-<br>Tenerife  | ESP.322                | 54  | 15997-16399                     | 19                    | Tahiti                         | Polynesian                         | FRA.317                | 4       | 16189-16375                     | 45          |    |
| Spain                                    | Catalonia                       | ESP.CAU                | 15  | 16090-16370                     | 10                    | Tonga                          | Polynesian                         | TGO.317                | 6       | 16064-16375                     | 45          |    |
| Spain                                    | Caucasian                       | ESP.CAU                | 30  | 16090-16365                     | 60                    | Tonga                          | Polynesian                         | TGO.317                | 1       | 16024-16381; 23<br>63-374       | 23          |    |
| Spain                                    | Caucasian                       | ESP.CAU                | 78  | 16024-16569;<br>1-576           | 76,<br>* <sup>b</sup> | Tonga                          | Polynesian                         | TGO.317                | 1       | 16024-16381; 23<br>63-374       | 23          |    |
| Spain                                    | Caucasian                       | ESP.CAU                | 11  | 16090-16370                     | 10                    | Tonga                          | Polynesian                         | TGO.317                | 2       | 16190-16370                     | 11          |    |
| Spain                                    | Caucasian                       | ESP.CAU                | 18  | 15997-16399                     | 19                    | Vanuatau                       | Nguna                              | VUT.315                | 41      | 16041-16400                     | 34          |    |
| Spain                                    | Galacia                         | ESP.CAU                | 92  | 16024-16383                     | 77                    | Vanuatau                       | ND                                 | VUT.315                | 1       | 16041-16400                     | 85          |    |
| Spain                                    | Northern<br>Region              | ESP.CAU                | 30  | 16090-16370                     | 10                    | Vanuatau                       | ND                                 | VUT.315                | 51      | 16064-16375                     | 45          |    |
| Spain                                    | Zaragoza                        | ESP.CAU                | 103 | 16024-16391;<br>60-380          | 78,<br>* <sup>b</sup> |                                |                                    |                        |         |                                 |             |    |
| Switzerland                              | Caucasian                       | CHE.CAU                | 154 | 16020-16400;<br>40-400          | 79                    |                                |                                    |                        |         |                                 |             |    |
| Switzerland                              | Caucasian                       | CHE.CAU                | 74  | 16024-16383                     | 80                    |                                |                                    |                        |         |                                 |             |    |
| Switzerland                              | Caucasian                       | CHE.CAU                | 1   | 16086-16519                     | 15                    |                                |                                    |                        |         |                                 |             |    |
| Turkey                                   | ND                              | TUR.CAU                | 29  | 16097-16400;<br>30-400          | 58                    |                                |                                    |                        |         |                                 |             |    |
| Turkey                                   | ND                              | TUR.CAU                | 45  | 16024-16401                     | 81                    |                                |                                    |                        |         |                                 |             |    |

<sup>a</sup>ND – Not defined.

<sup>b</sup>SWGDM – Scientific Working Group for DNA Analysis Methods.

<sup>c</sup>References 13,14,15,22,48,72.

| Country                                       | Code       | Adjective                       |
|---|------------|---------------------------------|
| Afghanistan (the Islamic State of)            | AFG        | Afghan                          |
| Albania (the Republic of)                     | ALB        | Albanian                        |
| Algeria (the People's Democratic Republic of) | DZA        | Algerian                        |
| Andorra (the Principality of)                 | AND        | Andorran                        |
| Angola (the Republic of)                      | AGO        | Angolan                         |
| Antigua and Barbuda                           | ATG        | Antigua and Barbuda (of)        |
| Argentina (the Argentine Republic)            | ARG        | Argentine                       |
| Armenia (the Republic of)                     | ARM        | Armenian                        |
| Australia                                     | AUS        | Australian                      |
| Austria (the Republic of)                     | AUT        | Austrian                        |
| Azerbaijan (the Azerbaijani Republic)         | AZE        | Azerbaijani                     |
| Bahamas (the Commonwealth of the)             | BHS        | Bahamian                        |
| Bahrain (the State of)                        | BHR        | Bahraini                        |
| Bangladesh (the People's Republic of)         | BGD        | Bangladesh (of) / a Bangladeshi |
| Barbados                                      | BRB        | Barbadian                       |
| Belarus (the Republic of)                     | BLR        | Belarusian                      |
| Belgium (the Kingdom of)                      | BEL        | Belgian                         |
| Belize  | BLZ        | Belizean                        |
| Benin (the Republic of)                       | BEN        | Beninese                        |
| Bhutan (the Kingdom of)                       | BTN        | Bhutanese                       |
| Bolivia (the Republic of)                     | BOL        | Bolivian                        |
| Bosnia and Herzegovina                        | BIH        | Bosnia and Herzegovina (of)     |
| Botswana (the Republic of)                    | BWA        | Botswana (of)                   |
| Brazil (the Federative Republic of)           | BRA        | Brazilian                       |
| Brunei Darussalam                             | BRN        | Brunei Darussalam (of)          |
| BuldrGia (the Republic of)                    | GDR-1125.8 | (BolldrGia)                     |

| Country   | Code | Adjective                                      |
|---|------|--|
| Libyan Arab Jamahiriya (the Socialist People's) | LBY  | Libyan   |
| Liechtenstein (the Principality of)             | LIE  | Liechtenstein (of)                             |
| Lithuania (the Republic of)                     | LTU  | Lithuanian                                     |
| Luxembourg (the Grand Duchy of)                 | LUX  | Luxembourg (of)                                |
| Macedonia (the former Yugoslav Republic of )    | MKD  | Macedonia (of the former Yugoslav Republic of) |
| Madagascar (the Republic of)                    | MDG  | Malagasy                                       |
| Malawi (the Republic of)                        | MWI  | Malawian                                       |
| Malaysia  | MYS  | Malaysian                                      |
| Maldives (the Republic of)                      | MDV  | Maldivian                                      |
| Mali (the Republic of)                          | MLI  | Malian   |
| Malta (the Republic of)                         | MLT  | Maltese  |
| Marshall Islands (the Republic of the)          | MHL  | Marshall Islands (of the), Marshallese         |
| Mauritania (the Islamic Republic of)            | MRT  | Mauritanian                                    |
| Mauritius (the Republic of)                     | MUS  | Mauritian                                      |
| Mozambique (the Republic of)                    | MOZ  | Mozambican                                     |
| Mexico: also known as the United Mexican States | MEX  | Mexican  |
| Micronesia (the Federated States of)            | FSM  | Micronesia (of the Federated States of )       |
| Monaco (the Principality of)                    | MCO  | Monegasque                                     |
| Mongolia  | MNG  | Mongolian                                      |
| Morocco (the Kingdom of)                        | MAR  | Moroccan                                       |
| Myanmar (the Union of)                          | MMR  | Myanmar  |
| Namibia (the Republic of)                       | NAM  | Namibian                                       |
| Nauri (the Republic of)                         | NRU  | Nauruan  |
| Nepal (the Kingdom of)                          | NPL  | Nepalese                                       |
| Netherlands (the Kingdom of the)                | NLD  | Netherlands; a                                 |

| Tribe                        | Code  | Region                           | Country           | Tribe           | Code  | Region                            | Country                         |
|------------------------------|-------|----------------------------------|-------------------|-----------------|-------|-----------------------------------|---------------------------------|
| Aborigine                    | 0.294 | ND <sup>a</sup>                  | Australia         | Chumash         | 0.048 | California                        | USA                             |
| Aborigine                    | 0.326 | Waripiri and Paalintji/Nglyambaa | Australia         | Clatsop         | 0.049 | Pacific Northwest                 | USA                             |
| Achumawi                     | 0.001 | California                       | USA               | Coahuiltec      | 0.050 | Southwest                         | USA                             |
| African origin               | AFR   | ND                               |                   | Coast Salish    | 0.051 | Pacific Northwest                 | USA                             |
| AfroCaribbean                | AFC   | ND                               |                   | Cochimi         | 0.052 | California                        | USA                             |
| Ahtena                       | 0.002 | Subarctic                        | USA               | Cocopa          | 0.053 | Southwest                         | USA                             |
| Algonkin                     | 0.003 | Subarctic                        | USA               | Coeur d'Alene   | 0.054 | Plateau                           | USA                             |
| Alsea                        | 0.004 | Pacific Northwest                | USA               | Columbia        | 0.055 | Plateau                           | USA                             |
| Alutiq                       | 0.005 | Arctic                           | USA               | Colville        | 0.056 | Plateau                           | USA                             |
| Amazon region: undefined     | 0.300 | Amazon Region                    | Brazil            | Comanche        | 0.057 | Great Plains                      | USA                             |
| Amazon region: Yanomami      | 0.299 | Roraima                          | Brazil            | Comox           | 0.058 | Pacific Northwest                 | USA                             |
| Anasazi                      | 0.006 | Southwest                        | USA               | Concho          | 0.059 | Southwest                         | USA                             |
| Ancient                      | ANC   | Ancient people                   | ND                | Coos            | 0.060 | Pacific Northwest                 | USA                             |
| Apache, Aravaipa             | 0.009 | Southwest                        | USA               | Coquille        | 0.061 | Pacific Northwest                 | USA                             |
| Apache, Chiricahua           | 0.010 | Southwest                        | USA               | Costanoan       | 0.062 | California                        | USA                             |
| Apache, Jicarilla            | 0.011 | Southwest                        | USA               | Cowichan        | 0.063 | Pacific Northwest                 | USA                             |
| Apache, Kiowa                | 0.012 | Great Plains                     | USA               | Cowlitz         | 0.064 | Pacific Northwest                 | USA                             |
| Apache, Lipan                | 0.013 | Southwest                        | USA               | Cree            | 0.065 | Subarctic                         | USA                             |
| Apache, Mescalero            | 0.014 | Southwest                        | USA               | Crow            | 0.066 | Great Plains                      | USA                             |
| Apache, Mimbreno             | 0.015 | Southwest                        | USA               | Cupeno          | 0.067 | California                        | USA                             |
| Apache, ND                   | 0.008 | North America                    | USA               | Dakota          | 0.068 | Great Plains                      | USA                             |
| Apache, San Carlos           | 0.016 | Southwest                        | USA               | Dogrib          | 0.069 | Subarctic                         | USA                             |
| Apache, Tonto                | 0.017 | Southwest                        | USA               | Duwamish        | 0.070 | Pacific Northwest                 | USA                             |
| Apache, White Mountain       | 0.018 | Southwest                        | USA               | Embera          | 0.329 | Eastern Region                    | Panama                          |
| Apache, Yavapai              | 0.019 | Southwest                        | USA               | Esselen         | 0.071 | California                        | USA                             |
| Arapaho                      | 0.020 | Great Plains                     | USA               | Evenk/Tungus    | 0.307 | Siberia                           | Russia                          |
| Arikara                      | 0.021 | Great Plains                     | USA               | Eyak            | 0.072 | Subarctic                         | USA                             |
| Asian origin                 | ASN   | ND                               |                   | Fang            | 0.334 | Sub-Saharan                       | Guinea                          |
| Assiniboin                   | 0.022 | Great Plains                     | USA               | Flathead        | 0.073 | Plateau                           | USA                             |
| Athabaskan                   | 0.023 | Subarctic                        | USA               | Gabrielino      | 0.074 | California                        | USA                             |
| Atsugewi                     | 0.024 | California                       | USA               | Gitksan         | 0.075 | Pacific Northwest                 | USA                             |
| Aztec                        | 0.025 | Middle America                   | USA               | Goshute         | 0.076 | Great Basin                       | USA                             |
| Bannock                      | 0.026 | Great Basin                      | USA               | Gros Ventre     | 0.077 | Great Plains                      | USA                             |
| Bantu-Speaking               | 0.318 | South Eastern Africa             | ND                | Guachichil      | 0.078 | Southwest                         | USA                             |
| Bear River Indians           | 0.027 | California                       | USA               | Guacicura       | 0.079 | California                        | USA                             |
| Beaver                       | 0.028 | Subarctic                        | USA               | Guam            | 0.335 | Mariana Islands (South)/Guamanian | USA                             |
| Bella Bella                  | 0.029 | Pacific Northwest                | USA               | Guayami/Ngobe   | 0.301 | Western Region                    | Panama                          |
| Bella Coola                  | 0.030 | Pacific Northwest                | USA               | Haida           | 0.080 | Pacific Northwest                 | USA/Canada                      |
| Beothuk                      | 0.031 | Subarctic                        | USA               | Haisla          | 0.081 | Pacific Northwest                 | USA                             |
| Berber                       | 0.332 | Northern Morocco: Rif Mountains  | Morocco           | Halchidhoma     | 0.082 | Southwest                         | USA                             |
| Biaka                        | 0.314 | ND                               | South Africa      | Halyikwamai     | 0.083 | Southwest                         | USA                             |
| Blackfoot                    | 0.032 | Great Plains                     | USA               | Han             | 0.084 | Subarctic                         | USA                             |
| Blood                        | 0.033 | Great Plains                     | USA               | Hare            | 0.085 | Subarctic                         | USA                             |
| Boruca                       | 0.302 | Western Region                   | Panama            | Havasupai       | 0.086 | Southwest                         | USA                             |
| Bubi                         | 0.325 | Bioko Island                     | Equatorial Guinea | Hawaiian        | 0.087 | Pacific Islands                   | USA                             |
| Cahto                        | 0.034 | California                       | USA               | Hazda           | 0.343 | Africa                            | The United Republic of Tanzania |
| Cahuilla                     | 0.035 | California                       | USA               | Herero!         | 0.337 | South Western Africa              | Botswana                        |
| Cambridge Reference Sequence | CRS   |                                  |                   | Hidatsa         | 0.088 | Great Plains                      | USA                             |
| Canary Islander              | 0.322 | West Coast North Africa          | Spain             | Hispanic origin | HIS   | ND                                |                                 |
| Caribs                       | CAR   | ND                               | Caribbean Area    | Hoh             | 0.089 | Pacific Northwest                 | USA                             |
| Carrier                      | 0.036 | Subarctic                        | USA               | Hohokhomaec     |       |                                   |                                 |
| Caucasian                    | CAU   | ND                               |                   |                 |       |                                   |                                 |
| Cayuse                       | 0.037 | Plateau                          | USA               |                 |       |                                   |                                 |
| Chastacosta                  | 0.038 | Pacific Northwest                | USA               |                 |       |                                   |                                 |
| Chehalis                     | 0.039 | Pacific Northwest                | USA               |                 |       |                                   |                                 |
| Chelan                       | 0.040 | Plateau                          | USA               |                 |       |                                   |                                 |
| Chemehuevi                   | 0.041 | Great Basin                      | USA               |                 |       |                                   |                                 |
| Cheyenne                     | 0.042 | Great Plains                     | USA               |                 |       |                                   |                                 |
| Chilcotin                    | 0.043 | Subarctic                        | USA               |                 |       |                                   |                                 |
| Chilula                      | 0.044 | California                       | USA               |                 |       |                                   |                                 |
| Chimariko                    | 0.045 | California                       | USA               |                 |       |                                   |                                 |
| Chinook                      | 0.046 | Pacific Northwest                | USA               |                 |       |                                   |                                 |
| Chipewyan                    | 0.047 | Subarctic                        | USA               |                 |       |                                   |                                 |



| Tribe      | Code  | Region                     | Country |
|------------|-------|----------------------------|---------|
| Kansa      | 0.105 | Great Plains               | USA     |
| Karankawa  | 0.106 | Southwest                  | USA     |
| Karok      | 0.107 | California                 | USA     |
| Kaska      | 0.108 | Subarctic                  | USA     |
| Kawaiisu   | 0.109 | Great Basin                | USA     |
| Kichai     | 0.110 | Great Plains               | USA     |
| Kiliwa     | 0.111 | California                 | USA     |
| Kiowa      | 0.112 | Great Plains               | USA     |
| Kitanemuk  | 0.113 | California                 | USA     |
| Klallam    | 0.114 | Pacific Northwest          | USA     |
| Klamath    | 0.115 | Plateau                    | USA     |
| Klickitat  | 0.116 | Plateau                    | USA     |
| Kohuana    | 0.117 | Southwest                  | USA     |
| Kootenai   | 0.118 | Plateau                    | USA     |
| Koryak     | 0.324 | Kamchatka<br>Peninsula     | Russia  |
| Koyukon    | 0.119 | Subarctic                  | USA     |
| Kraho      | 0.304 | ND                         | Brazil  |
| Kuitsh     | 0.120 | Pacific Northwest          | USA     |
| Kumeyaay   | 0.121 | California                 | USA     |
| Kuna       | 0.298 | South Eastern<br>Coastline | Panama  |
| Kung       | 0.336 | South Western<br>Africa    | Namibia |
| Kutchin    | 0.122 | Subarctic                  | USA     |
| Kwakiutl   | 0.123 | Pacific Northwest          | USA     |
| Kwalhioqua | 0.124 | Pacific Northwest          | USA     |
| Lake       | 0.125 | Plateau                    | USA     |

| Tribe          | Code  | Region            | Country      |
|----------------|-------|-------------------|--------------|
| Salish         | 0.207 | Pacific Northwest | USA          |
| Samish         | 0.208 | Pacific Northwest | USA          |
| San            | 0.311 | ND                | South Africa |
| Sanpoil        | 0.209 | Plateau           | USA          |
| Sarsi          | 0.210 | Great Plains      | USA          |
| Sauk-Suiattle  | 0.211 | Pacific Northwest | USA          |
| Sechelt        | 0.212 | Pacific Northwest | USA          |
| Sekani         | 0.213 | Subarctic         | USA          |
| Seri           | 0.214 | Southwest         | USA          |
| Serrano        | 0.215 | California        | USA          |
| Shasta         | 0.216 | California        | USA          |
| Shoalwater     | 0.217 | Pacific Northwest | USA          |
| Shoshone       | 0.218 | Great Basin       | USA          |
| Shuswap        | 0.219 | Plateau           | USA          |
| Siletz         | 0.220 | Pacific Northwest | USA          |
| Sinkyone       | 0.221 | California        | USA          |
| Siuslaw        | 0.222 | Pacific Northwest | USA          |
| Skagit         | 0.223 | Pacific Northwest | USA          |
| Skokomish      | 0.224 | Pacific Northwest | USA          |
| Slavey         | 0.225 | Subarctic         | USA          |
| Snohomish      | 0.226 | Pacific Northwest | USA          |
| Snoqualmie     | 0.227 | Pacific Northwest | USA          |
| Sobaipuri      | 0.228 | Southwest         | USA          |
| Songhees       | 0.229 | Pacific Northwest | USA          |
| Sotho-Tswana   | 0.312 | ND                | South Africa |
| Spokan         | 0.230 | Plateau           | USA          |
| Squamish       | 0.231 | Pacific Northwest | USA          |
| Squaxin Island | 0.232 | Pacific Northwest | USA          |
| Steilacoom     | 0.233 | Pacific Northwest | USA          |
| Stillaguamish  | 0.234 | Pacific Northwest | USA          |
| Suma           | 0.235 | Southwest         | USA          |
| Suquamish      | 0.236 | Pacific Northwest | USA          |
| Swinomish      | 0.237 | Pacific Northwest | USA          |
| Tagish         | 0.238 | Subarctic         | USA          |
| Tahltan        | 0.239 | Subarctic         | USA          |
| Takelma        | 0.240 | Pacific Northwest | USA          |
| Tanaina        | 0.241 | Subarctic         | USA          |
| Tano           | 0.242 | Southwest         | USA          |
| Tarahumara     | 0.243 | Southwest         | USA/Mexico   |
| Tataviam       | 0.244 | California        | USA          |
| Tawakoni       | 0.245 | Great Plains      | USA          |
| Tenana         | 0.246 | Subarctic         | USA          |
| Tenino         | 0.247 | Plateau           | USA          |
| Tepehuan       | 0.248 | Southwest         | USA          |
| Thompson       | 0.249 | Plateau           | USA          |
| Tibetan        | 0.306 | Tibet             | China        |
| Tillamook      | 0.250 | Pacific Northwest | USA          |
| Tiwa           | 0.251 | Southwest         | USA          |
| Tlingit        | 0.252 | Pacific Northwest | USA          |
| Tohono O'odham | 0.253 | Southwest         | USA          |

| Tribe   | Code  | Region                                      | Country       |
|---|-------|---|---------------|
| Tolowa  | 0.254 | California                                  | USA           |
| Toltec  | 0.255 | Middle America                              | USA           |
| Tristan da Cunha  | 0.340 | Southern Atlantic Ocean                     | Great Britain |
| Tsetsaut  | 0.256 | Subarctic                                   | USA           |
| Tsimshian   | 0.257 | Pacific Northwest                           | USA           |
| Tsonga  | 0.313 | ND  | South Africa  |
| Tubatulabal   | 0.258 | California                                  | USA           |
| Tutchone  | 0.259 | Subarctic                                   | USA           |
| Tututni   | 0.260 | Pacific Northwest                           | USA           |
| Twana   | 0.261 | Pacific Northwest                           | USA           |
| Umatilla04G-5.1(-)90.dJTUS  |       |   |               |
| Stillaguami112.8(simshian0.2olreek7r)135UpperionCalif65acific Northwest       |       |   | USA           |
| Umatilla04G-5.1(-46)g   |       | A7.6(A)9.8.T*(T)135.3(ututni)-Unknown1703.7 |               |
| TenanaP   |       | USA   |               |
| TutchoneP   |       | USA   |               |
| Tutchoneacific Northwest  |       | USA   |               |
| StillaguamihoneP  |       |   |               |
| Tenana7.246.25e-17003.Soum*{Sn}37US   |       |   |               |
| Tutchoneacific  |       |   |               |
| Tenanaalif95(Soum*W).251Oceanch.io7rGreat Brita(Suma)-6358.-TD(T)112.8(setsa  |       |   |               |
| Tutc112.8(simshianW).251  |       |   | USA           |
| Tibetan   |       | USA   |               |
| Tutcho5eT1703.28.7Cali330nia  |       |   |               |
| Umatilla04G-5.1(Y(oni)-4el54)knife1703.6(P)75.8tic                            |       |   | USA           |
| TY(o.1(0.o63..7(0.24)-s170397(T*75.87nia)-5034(US)37.6(A)JT*(T)135.3(utchone) |       |   |               |
| Umatilla04G-5.1(-46)gA  |       |   |               |

ture contributions a standardized format should be developed that is consistent with the structure in the Compendium. Finally, the original concordance search format has been replaced by the FBI-developed searching program "MitoSearch," and searching algorithms are included in Combined DNA Index System to support the Missing Persons and Forensic Indices. The database will be made available via

(<http://www.fbi.gov/hq/lab/forensics/forensics.htm>). The data contained in this Compendium cannot represent all data currently available; mtDNA population data are being developed and disseminated continuously. In fact, by the time this Compendium is published, the web-based data will be augmented compared with the data included in this Compendium. Furthermore, in an attempt to remain current and correct, we invite submissions of new sequence data for inclusion in future editions and welcome comments from users. We also especially welcome corrections in the public literature

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