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Reference 1: Kling D, Tillmar A, Egeland T, Mostad P. Int J Legal Med. 2015 Sep;129(5):943-54.

Reference 2: Kling D, Dell'Amico B Tillmar AO. Forensic Sci Int Genet. 2015 Jul;17:1-7.

Timestamp: Wed Apr 16 10:59:30 2025

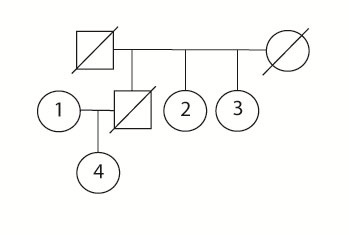
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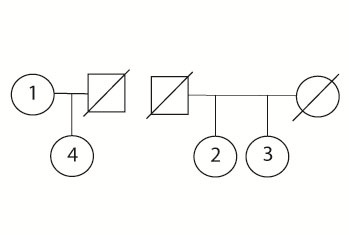
**Pedigrees**

NB! The genders of the individuals depicted in the pedigrees (illustrations) may not correspond to the specified genders. Please see table of persons for correct gender

Pedigree 1 : (Two Aunts/Uncles (Data mother))



Pedigree 2 : (Mother and child Full siblings)



**Persons**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 1. matka  (Female) | 2. strýko\_1  (Male) | 3. strýko\_2  (Male) | 4. dieta  (Female) |
| DXS10148 | 18, 28.1 | 27.1, \* | 27.1, \* | 18, 27.1 |
| DXS10135 | 23, 25 | 23, \* | 23, \* | 23, 23 |
| DXS8378 | 10, 11 | 10, \* | 10, \* | 10, 10 |
| DXS7132 | 15, 15 | 13, \* | 14, \* | 14, 15 |
| DXS10079 | 19, 19 | 19, \* | 20, \* | 19, 20 |
| DXS10074 | 16, 18 | 17, \* | 16, \* | 16, 18 |
| DXS10103 | 18, 19 | 19, \* | 19, \* | 19, 19 |
| HPRTB | 13, 13 | 12, \* | 12, \* | 12, 13 |
| DXS10101 | 28.2, 33 | 31.2, \* | 27.2, \* | 31.2, 33 |
| DXS10146 | 30, 30 | 29, \* | 27, \* | 27, 30 |
| DXS10134 | 35, 40.3 | 34, \* | 37, \* | 35, 37 |
| DXS7423 | 15, 15 | 15, \* | 16, \* | 15, 16 |
|  |  |  |  |  |

**Results (Exact LR)**

|  |  |  |
| --- | --- | --- |
| Pedigree | lnLikelihood | LR versus pedigree 2 (W) |
| Pedigree 1 | -84.9882 | 7.043e+006 (0.99999986) |
| Pedigree 2 | -100.7557 | 1 (1.419922e-007) |

**Results (Cluster approach/Merlin)**

|  |  |  |
| --- | --- | --- |
| Pedigree | lnLikelihood | LR versus pedigree 2 (W) |
| Pedigree 1 | -84.8410 | 7.77e+006 (0.99999987) |
| Pedigree 2 | -100.7068 | 1 (1.2870195e-007) |

**LR\* exact per marker (Likelihood)**

|  |  |  |  |
| --- | --- | --- | --- |
| Cluster | Marker | LR for ped 1 | LR for ped 2 |
| Cluster0 | DXS10148 | 3.84 (0.0003213) | 1 (8.368e-005) |
|  | DXS10135 | 10.1 (1.455e-007) | 1 (3.751e-009) |
|  | DXS8378 | 5.357 (4.681e-009) | 1 (2.254e-011) |
| Cluster1 | DXS7132 | 1.525 (5.324e-012) | 1 (1.681e-014) |
|  | DXS10079 | 3.471 (2.001e-014) | 1 (1.821e-017) |
|  | DXS10074 | 2.386 (1.962e-017) | 1 (7.483e-021) |
| Cluster2 | DXS10103 | 1.794 (4.284e-019) | 1 (9.107e-023) |
|  | HPRTB | 2.052 (7.345e-021) | 1 (7.609e-025) |
|  | DXS10101 | 4.618 (3.661e-026) | 1 (8.212e-031) |
| Cluster3 | DXS10146 | 2.098 (1.675e-030) | 1 (1.791e-035) |
|  | DXS10134 | 5.673 (8.298e-035) | 1 (1.564e-040) |
|  | DXS7423 | 13.28 (1.231e-037) | 1 (1.747e-044) |

\*The LR is computed as the marginal value, i.e. the increase in LR for each consecutive marker in the Markov chain

**Settings**

Lambda: 307.000

Use cluster specific lambdas: Disabled

Pseudo-counts: Disabled

Zero mutation rates: Disabled

**Systems**

**Cluster0**

**DXS10148**

Genetic position (cM): 19.840

Male mutation model: Extended step-wise model

Male mutation rate: 0.0031

Male mutation range: 0.1

Female mutation model: Extended step-wise model

Female mutation rate: 0.0031

Female mutation range: 0.1

|  |  |
| --- | --- |
| Allele | Frequency |
| 14 | 0.003257 |
| 17 | 0.009772 |
| 18 | 0.1238 |
| 19 | 0.0228 |
| 20 | 0.003257 |
| 21.1 | 0.006515 |
| 22 | 0.003257 |
| 22.1 | 0.01303 |
| 23 | 0.03909 |
| 23.1 | 0.08795 |
| 24 | 0.03257 |
| 24.1 | 0.1303 |
| 25 | 0.003257 |
| 25.1 | 0.1401 |
| 26.1 | 0.1336 |
| 26.2 | 0.003257 |
| 27.1 | 0.1661 |
| 28.1 | 0.04235 |
| 28.2 | 0.003257 |
| 29.1 | 0.0228 |
| 30.1 | 0.006515 |
| 31.1 | 0.003257 |

**DXS10135**

Genetic position (cM): 20.030

Male mutation model: Extended step-wise model

Male mutation rate: 0.0041

Male mutation range: 0.1

Female mutation model: Extended step-wise model

Female mutation rate: 0.0041

Female mutation range: 0.1

|  |  |
| --- | --- |
| Allele | Frequency |
| 15 | 0.003257 |
| 17 | 0.01629 |
| 18 | 0.04235 |
| 19 | 0.05863 |
| 19.1 | 0.003257 |
| 20 | 0.05212 |
| 20.1 | 0.01629 |
| 21 | 0.06515 |
| 21.1 | 0.003257 |
| 22 | 0.07166 |
| 22.1 | 0.01629 |
| 23 | 0.07818 |
| 23.1 | 0.003257 |
| 24 | 0.07492 |
| 24.1 | 0.003257 |
| 25 | 0.1075 |
| 25.1 | 0.01303 |
| 26 | 0.04886 |
| 27 | 0.07492 |
| 28 | 0.07166 |
| 29 | 0.0456 |
| 29.1 | 0.003257 |
| 30 | 0.08795 |
| 31 | 0.01954 |
| 32 | 0.003257 |
| 32.1 | 0.003257 |
| 34 | 0.009772 |
| 38.1 | 0.003257 |

**DXS8378**

Genetic position (cM): 20.210

Male mutation model: Extended step-wise model

Male mutation rate: 0.0008

Male mutation range: 0.1

Female mutation model: Extended step-wise model

Female mutation rate: 0.0008

Female mutation range: 0.1

|  |  |
| --- | --- |
| Allele | Frequency |
| 9 | 0.01303 |
| 10 | 0.3648 |
| 11 | 0.3518 |
| 12 | 0.2476 |
| 13 | 0.01954 |
| 14 | 0.003257 |

**Cluster1**

**DXS7132**

Genetic position (cM): 90.750

Male mutation model: Extended step-wise model

Male mutation rate: 0.0027

Male mutation range: 0.1

Female mutation model: Extended step-wise model

Female mutation rate: 0.0027

Female mutation range: 0.1

|  |  |
| --- | --- |
| Allele | Frequency |
| 11 | 0.009772 |
| 12 | 0.09446 |
| 13 | 0.3029 |
| 14 | 0.3257 |
| 15 | 0.2215 |
| 16 | 0.04235 |
| 17 | 0.003257 |

**DXS10079**

Genetic position (cM): 90.820

Male mutation model: Extended step-wise model

Male mutation rate: 0.0049

Male mutation range: 0.1

Female mutation model: Extended step-wise model

Female mutation rate: 0.0049

Female mutation range: 0.1

|  |  |
| --- | --- |
| Allele | Frequency |
| 15 | 0.03583 |
| 16 | 0.0456 |
| 17 | 0.07818 |
| 18 | 0.1629 |
| 19 | 0.2215 |
| 20 | 0.2769 |
| 21 | 0.1075 |
| 21.2 | 0.003257 |
| 22 | 0.04886 |
| 22.1 | 0.003257 |
| 23 | 0.009772 |
| 24 | 0.003257 |
| 30 | 0.003257 |

**DXS10074**

Genetic position (cM): 90.830

Male mutation model: Extended step-wise model

Male mutation rate: 0.0024

Male mutation range: 0.1

Female mutation model: Extended step-wise model

Female mutation rate: 0.0024

Female mutation range: 0.1

|  |  |
| --- | --- |
| Allele | Frequency |
| 6 | 0.003257 |
| 7 | 0.04886 |
| 8 | 0.1336 |
| 9 | 0.003257 |
| 10 | 0.003257 |
| 11 | 0.006515 |
| 13 | 0.006515 |
| 14 | 0.006515 |
| 15 | 0.09772 |
| 16 | 0.2085 |
| 17 | 0.2866 |
| 18 | 0.1401 |
| 19 | 0.04886 |
| 20 | 0.003257 |
| 20.3 | 0.003257 |

**Cluster2**

**DXS10103**

Genetic position (cM): 149.370

Male mutation model: Extended step-wise model

Male mutation rate: 0.0015

Male mutation range: 0.1

Female mutation model: Extended step-wise model

Female mutation rate: 0.0015

Female mutation range: 0.1

|  |  |
| --- | --- |
| Allele | Frequency |
| 15 | 0.0228 |
| 16 | 0.1173 |
| 17 | 0.07166 |
| 18 | 0.1792 |
| 19 | 0.4593 |
| 20 | 0.1336 |
| 21 | 0.01629 |

**HPRTB**

Genetic position (cM): 149.660

Male mutation model: Extended step-wise model

Male mutation rate: 0.0018

Male mutation range: 0.1

Female mutation model: Extended step-wise model

Female mutation rate: 0.0018

Female mutation range: 0.1

|  |  |
| --- | --- |
| Allele | Frequency |
| 7 | 0.003257 |
| 8 | 0.003257 |
| 9 | 0.01629 |
| 10 | 0.003257 |
| 11 | 0.1336 |
| 12 | 0.3453 |
| 13 | 0.2964 |
| 14 | 0.1466 |
| 15 | 0.03909 |
| 16 | 0.01303 |

**DXS10101**

Genetic position (cM): 149.750

Male mutation model: Extended step-wise model

Male mutation rate: 0.0006

Male mutation range: 0.1

Female mutation model: Extended step-wise model

Female mutation rate: 0.0006

Female mutation range: 0.1

|  |  |
| --- | --- |
| Allele | Frequency |
| 25 | 0.003257 |
| 25.2 | 0.006515 |
| 26.2 | 0.02606 |
| 27 | 0.01303 |
| 27.2 | 0.06515 |
| 28 | 0.01954 |
| 28.2 | 0.1107 |
| 29 | 0.009772 |
| 29.2 | 0.1336 |
| 30 | 0.06189 |
| 30.2 | 0.1759 |
| 31 | 0.09772 |
| 31.2 | 0.09772 |
| 32 | 0.05537 |
| 32.2 | 0.05537 |
| 33 | 0.05212 |
| 34 | 0.009772 |
| 35 | 0.003257 |
| 36 | 0.003257 |

**Cluster3**

**DXS10146**

Genetic position (cM): 183.720

Male mutation model: Extended step-wise model

Male mutation rate: 0.0022

Male mutation range: 0.1

Female mutation model: Extended step-wise model

Female mutation rate: 0.0022

Female mutation range: 0.1

|  |  |
| --- | --- |
| Allele | Frequency |
| 23 | 0.003257 |
| 24 | 0.01303 |
| 25 | 0.08469 |
| 26 | 0.07818 |
| 27 | 0.1401 |
| 28 | 0.1596 |
| 29 | 0.1857 |
| 30 | 0.09772 |
| 31 | 0.02606 |
| 32 | 0.009772 |
| 32.2 | 0.003257 |
| 33.2 | 0.003257 |
| 36.2 | 0.003257 |
| 37.2 | 0.006515 |
| 39.2 | 0.05212 |
| 40.2 | 0.01954 |
| 41.2 | 0.01629 |
| 42.2 | 0.009772 |
| 43.2 | 0.02932 |
| 44.2 | 0.02606 |
| 45.2 | 0.009772 |
| 46.2 | 0.01629 |
| 48.2 | 0.006515 |

**DXS10134**

Genetic position (cM): 183.960

Male mutation model: Extended step-wise model

Male mutation rate: 0.0028

Male mutation range: 0.1

Female mutation model: Extended step-wise model

Female mutation rate: 0.0028

Female mutation range: 0.1

|  |  |
| --- | --- |
| Allele | Frequency |
| 30 | 0.003257 |
| 31 | 0.003257 |
| 32 | 0.02932 |
| 33 | 0.05212 |
| 34 | 0.114 |
| 35 | 0.2052 |
| 36 | 0.2313 |
| 37 | 0.1629 |
| 37.2 | 0.003257 |
| 38 | 0.02606 |
| 38.2 | 0.003257 |
| 38.3 | 0.01629 |
| 39 | 0.01954 |
| 39.3 | 0.0456 |
| 40 | 0.003257 |
| 40.3 | 0.01629 |
| 41.3 | 0.0228 |
| 42.3 | 0.01303 |
| 43.3 | 0.0228 |
| 44.3 | 0.003257 |
| 45.3 | 0.003257 |

**DXS7423**

Genetic position (cM): 184.190

Male mutation model: Extended step-wise model

Male mutation rate: 0.0009

Male mutation range: 0.1

Female mutation model: Extended step-wise model

Female mutation rate: 0.0009

Female mutation range: 0.1

|  |  |
| --- | --- |
| Allele | Frequency |
| 13 | 0.09772 |
| 14 | 0.3616 |
| 15 | 0.355 |
| 16 | 0.1596 |
| 17 | 0.02606 |

**Advanced settings**

|  |  |  |
| --- | --- | --- |
| Pedigree | Threshold | Steps |
| Duo (Maternity) | 1e-005 | 0 |
| Duo (Paternity) | 1e-005 | 0 |
| Trio | 1e-005 | 0 |
| Unrelated (Duo) | 1e-005 | 0 |
| Full Siblings | 1e-005 | 0 |
| Half Siblings(Maternal) | 1e-005 | 0 |
| Half Siblings(Paternal) | 1e-005 | 0 |
| Unrelated | 1e-005 | 0 |
| Full Siblings (Data mother) | 1e-005 | 0 |
| Half Siblings (Data mothers) | 1e-005 | 0 |
| Unrelated (Data mothers) | 1e-005 | 0 |
| Grandmother | 1e-005 | 0 |
| Grandmother (Data mother) | 1e-005 | 0 |
| Aunt/Uncle | 1e-005 | 0 |
| Aunt/Uncle (Data mother) | 1e-005 | 0 |
| Aunt/Uncle (Maternal) | 1e-005 | 0 |
| Two Aunts/Uncles | 1e-005 | 0 |
| Two Aunts/Uncles (Data mother) | 1e-005 | 0 |
| Three Full Siblings | 1e-005 | 0 |
| Three Full Siblings (Data mother) | 1e-005 | 0 |
| Two Full Siblings One Half Sibling | 1e-005 | 0 |
| Two Full Siblings One Paternal Half Sibling | 1e-005 | 0 |
| Two Full Siblings One Half Siblings (Data mothers) | 1e-005 | 0 |
| Two Full Siblings One Unrelated | 1e-005 | 0 |
| Mother and child Unrelated person | 1e-005 | 0 |
| Mother and child Full siblings | 1e-005 | 0 |
| Full siblings (Data mother) Unrelated person | 1e-005 | 0 |
| Full siblings (Data mother) Mother and child | 1e-005 | 0 |
| Half siblings (Maternal) (Data mother) | 1e-005 | 0 |
| Half siblings (Paternal) (Data mother) | 1e-005 | 0 |
| Mother and Child Unrelated person | 1e-005 | 0 |
| Maternal Cousins | 1e-005 | 0 |
| Maternal Grandparent | 1e-005 | 0 |
| Three halfsiblings | 1e-005 | 0 |
| Three paternalhalf siblings | 1e-005 | 0 |
| Two paternal half siblings Unrelated | 1e-005 | 0 |
| Threeunrelated | 1e-005 | 0 |
| Maternal CousinsPaternal halfSiblings | 1e-005 | 0 |
| Paternal CousinsMaternal halfSiblings | 1e-005 | 0 |
| Two Full Siblings One Half Sibling | 1e-005 | 0 |
| Two Full Siblings One Half Sibling | 1e-005 | 0 |
| Paternal half aunt | 1e-005 | 0 |
| Maternal half aunt(Paternal link) | 1e-005 | 0 |
| Maternal half aunt(Maternal link) | 1e-005 | 0 |
| Two paternal half siblings Unrelated | 1e-005 | 0 |
| Two paternal half siblings Unrelated | 1e-005 | 0 |
| Paternal auntTwo full siblings | 1e-005 | 0 |
| Paternal aunt Two full siblings(Data mother) | 1e-005 | 0 |
| Paternal cousins | 1e-005 | 0 |
| Paternal half siblingsIncest | 1e-005 | 0 |