

## **S1 Figure: Median-Joining Networks (1-98) for mtDNA sequences of the 202 studied samples**

Phylogenetic trees (1–98), made with Median-Joining Network, from mtDNA sequences of the 202 archaic samples.

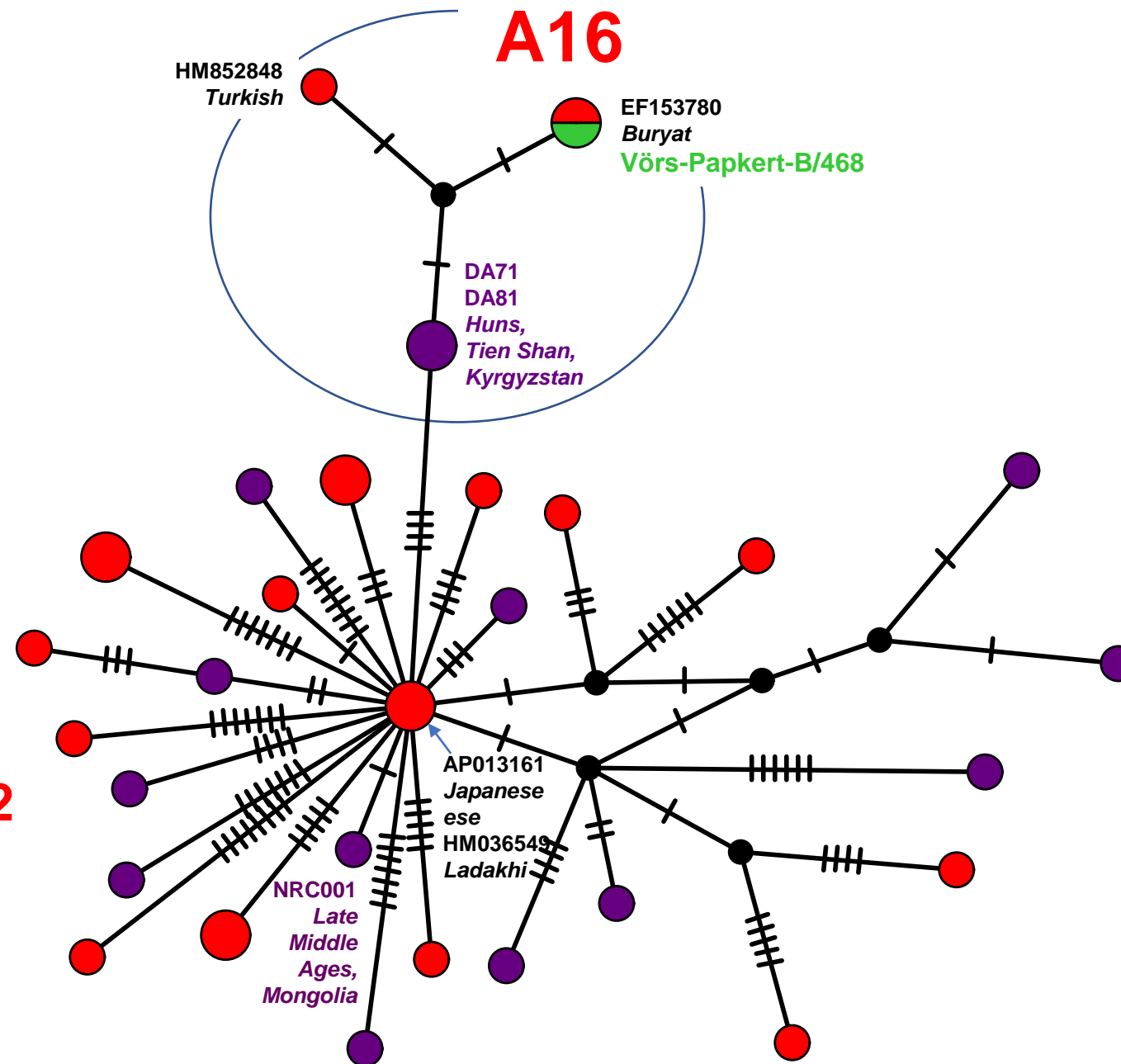
Phylogenetic trees are arranged in alphabetic order according to haplogroups. The 154 sub-haplogroups are depicted on 98 Networks. Samples falling into the same sub-haplogroup with the studied sample are encircled. The smallest colored circles represent one individual; circle sizes are proportional to the number of individuals with identical sequences. (When large number of sequences with few phylogenetically informative SNP-s are aligned, the algorithm may force the most similar but not identical sequences into the same large circle.) Green circles identify studied samples, red circles represent modern samples, and violet circles correspond to ancient samples.

Number of crosslines between neighboring circles denotes mutation distances. Length of connecting lines is irrelevant, as they were modified in order to fit page. Genbank accession number and origin of samples closest to the studied conquerors are listed next to the circles.

We summarized the probable origin of the samples' Hg lineage in colored framed text.

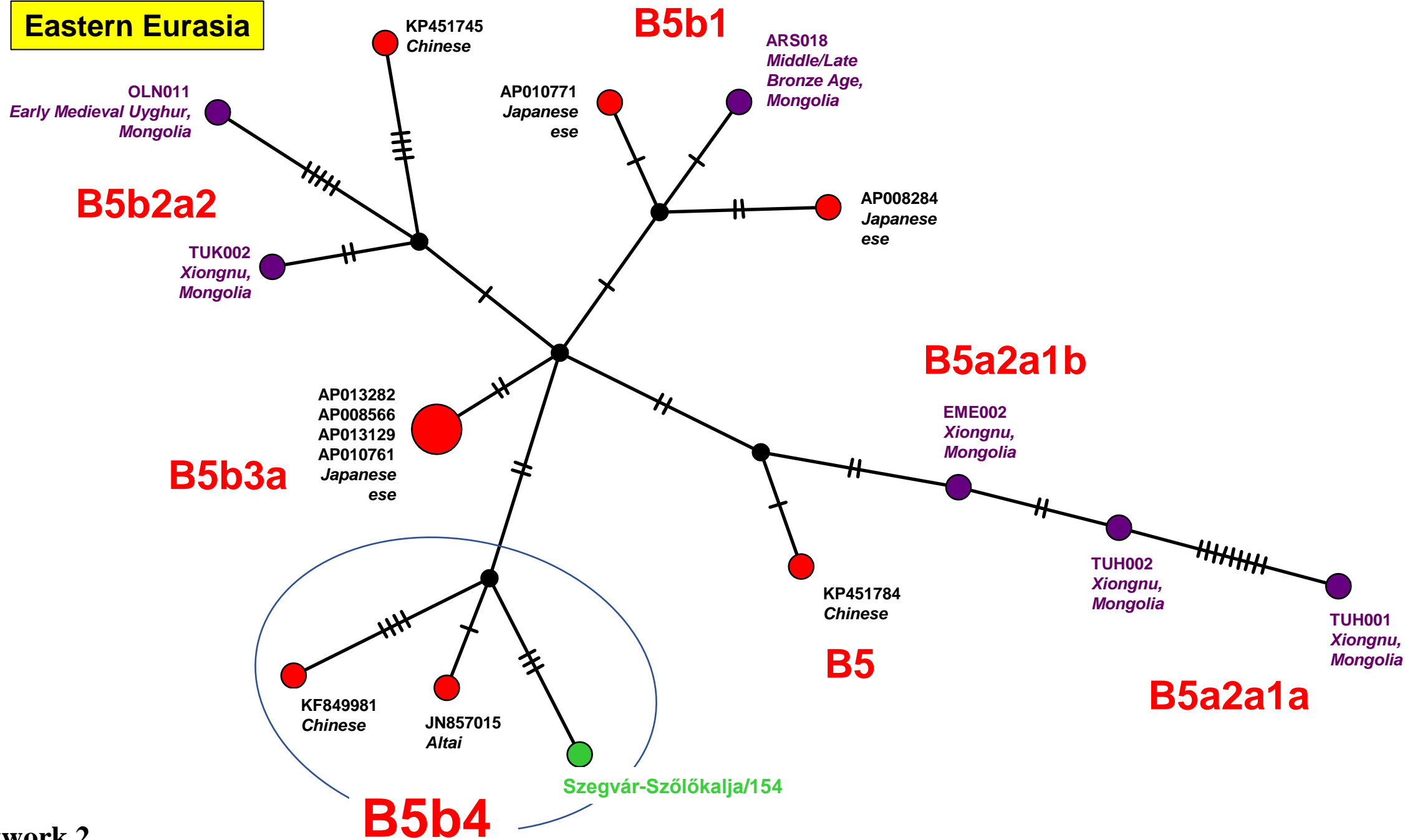
Eastern Eurasia

A+152+16362



Network 1

**Eastern Eurasia**



Network 2

# C4a2a1

## Eastern Eurasia

Early Bronze Age Hunter-Gatherer  
Cis-Baikal, Russia

DA334

Hconq2  
Conqueror  
Elite,  
Hungary

ARG003  
Late Middle Ages,  
Mongolia

Ibrány-Esbóhalom/38

FJ951504  
Buryat

FJ951579  
Khamnigan  
KPT006  
Early Bronze Age,  
Siberia, Russia

KF148216  
Evenk

KF148092  
Yakut

FJ951449  
Altai

FJ951482  
Buryat

KF148473  
Yakut

FJ951572  
Evenk

Uyelgi1  
Kushnarenkovo-  
Karayakupovo  
Culture, Russia

KF148564  
KF148436  
KF148455  
KF148566  
KF451476  
EU007861  
Yakuts  
FJ951609  
FJ951608  
Altai  
KF148246  
KF148218  
KF148501  
Evenks  
MH359216  
Bronze Age Cis-Baikal, Russia

KF148230  
KF148237  
Evenks

FJ951532  
Mongol

KF148221  
Evenk

KF148446  
Yakut

Early Bronze Age Hunter-Gatherer  
Cis-Baikal, Russia

DA336

Early Bronze Age  
Hunter-Gatherer  
Cis-Baikal, Russia

DA338

Eastern Eurasia

# C4a2c

## Eastern Eurasia

ARS008  
Middle/Late Bronze Age  
Deerstone Khirigsuur,  
Mongolia

DA99  
Middle Ages  
Nomad,  
Kyrgyzstan

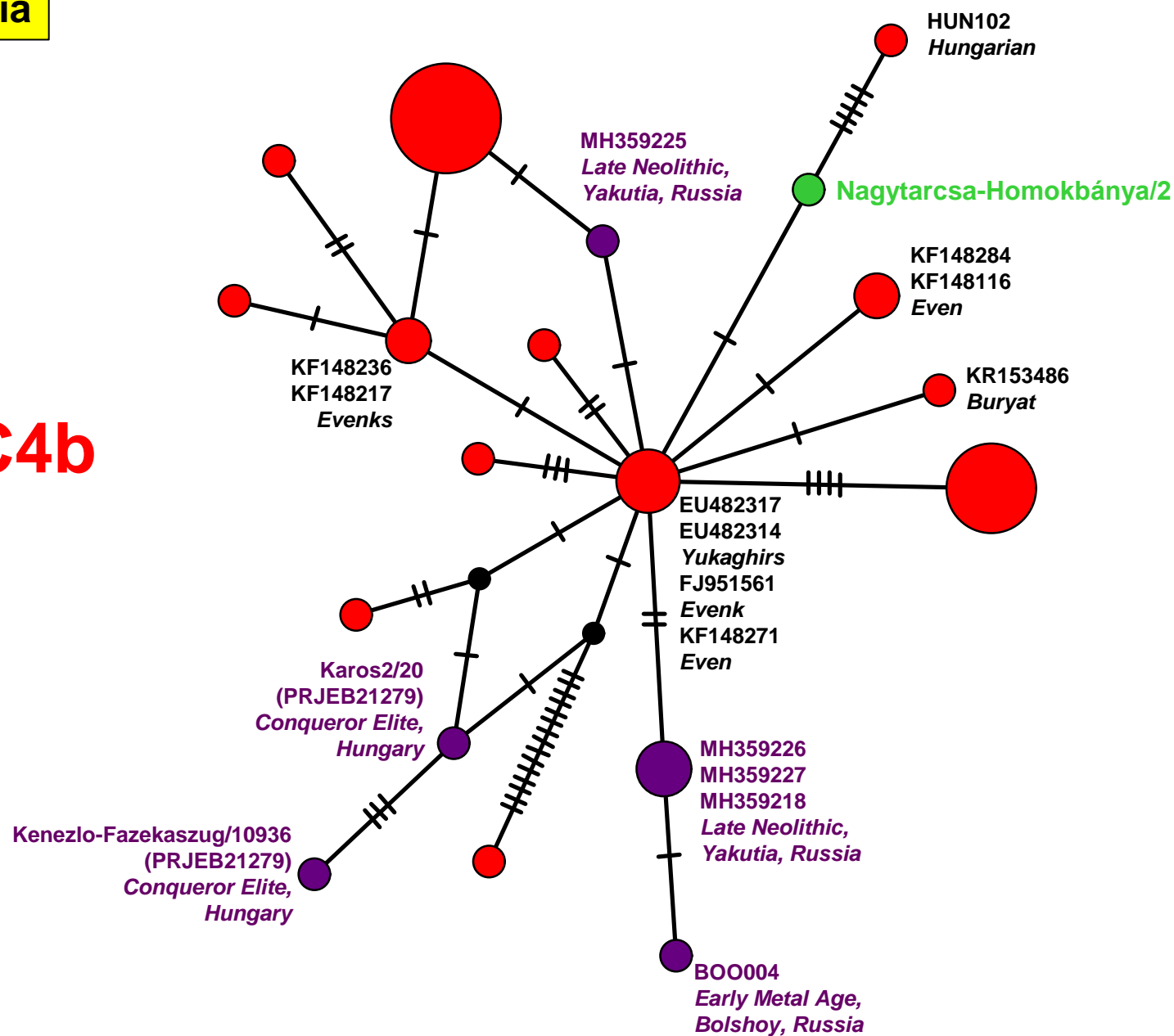
FJ951548  
Mongol

Püspökladány-Eperjesvölgy/216

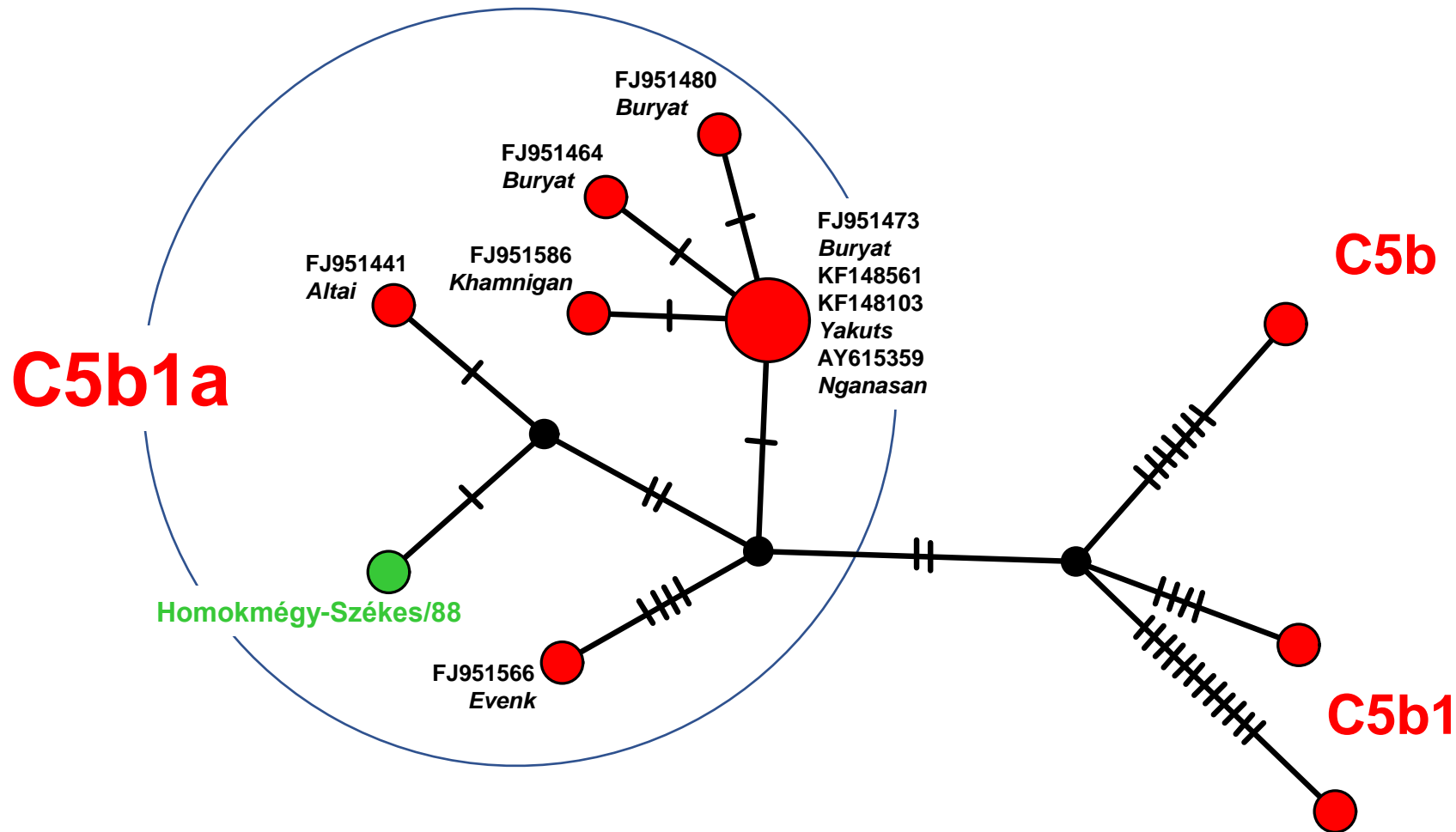
TUK07  
TUK09B  
Xiongnu,  
Mongolia

Eastern Eurasia

C4b



Eastern Eurasia



Eastern Eurasia

D4

D4b1a

D4b1a2

D4b1a1

D4b1

PLTM312  
Late-Neolithic Longshan,  
China

PLTM310  
PLTM311  
Late-Neolithic Longshan,  
China

AP008876  
Japaneseese

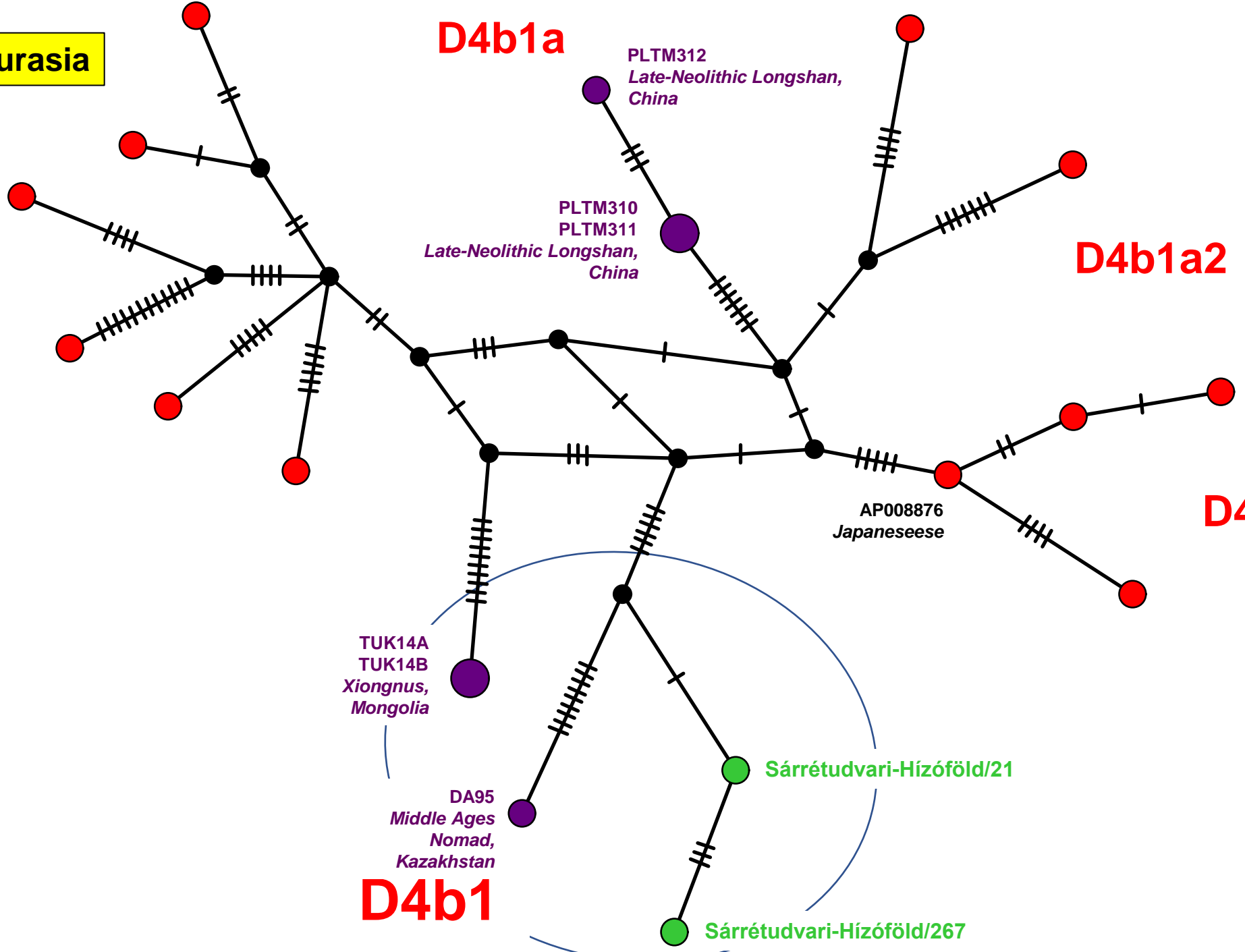
TUK14A  
TUK14B  
Xiongnus,  
Mongolia

DA95  
Middle Ages  
Nomad,  
Kazakhstan

Sárrétudvari-Hízófeld/21

Sárrétudvari-Hízófeld/267

Network 6



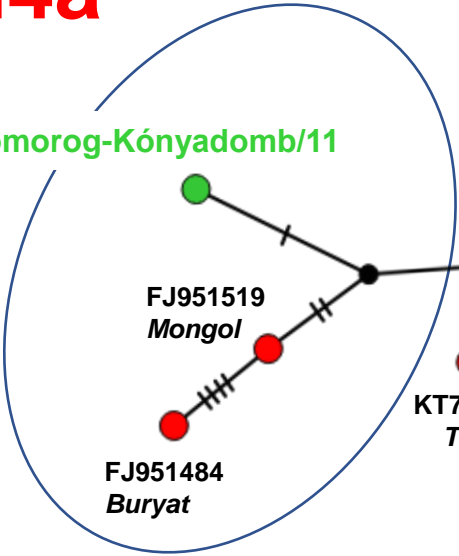
Eastern Eurasia

D4

D4h4a

Eastern Eurasia

Magyarhomorog-Könyadomb/11



FJ951519  
Mongol

FJ951484  
Buryat

KT725935  
Tibetan

AP008782  
Japaneseese

DA246  
Early Neolithic,  
Cis-Baikal, Russia

DA362  
Early Neolithic,  
Cis-Baikal, Russia

MH359189  
Iron Age,  
Amur Oblast, Russia

BOO006  
Early Metal Age,  
Bolshoy, Russia

FJ951571  
KF148506  
KF148234  
KF148213  
Evenks  
KF148421  
KF148233  
Evens

KF148249  
KF148215  
KF148179  
Evens

KF148448  
Yakut

Püspökladány-  
Eperjesvölgy/380

Vörs-Papkert-B/310

D4e4

D4e4a



Eastern Eurasia

D4I2

Homokmégy-Székes/38

KF148125  
Yakut

KF148443  
Yakut  
KF148189  
KF148174  
KF148170  
KF148495  
Evenks

KF148187  
KF148084  
Evenks

PTO001  
Early Iron Age Slab  
Grave,  
Buryatia, Russia

FJ951544  
Mongol

HM153527  
Tuvan

FJ951529  
Mongol

AP008496  
Japanesees

MH359213  
Bronze Age,  
Cis-Baikal, Russia

Early Middle Ages Türk,  
Mongolia

KPT005  
Early Bronze Age,  
Siberia, Russia

AP008780  
Japanesees  
e

D4j

Uyelgi21  
Kushnarenkovo-Karayakupovo,  
Trans-Ural, Russia

D4j3

TSA003  
Late Middle Ages  
Mongol,  
Mongolia

BAM001  
Xiongnu, Mongolia

KX358493  
Central Asian

AY255134  
Mongol

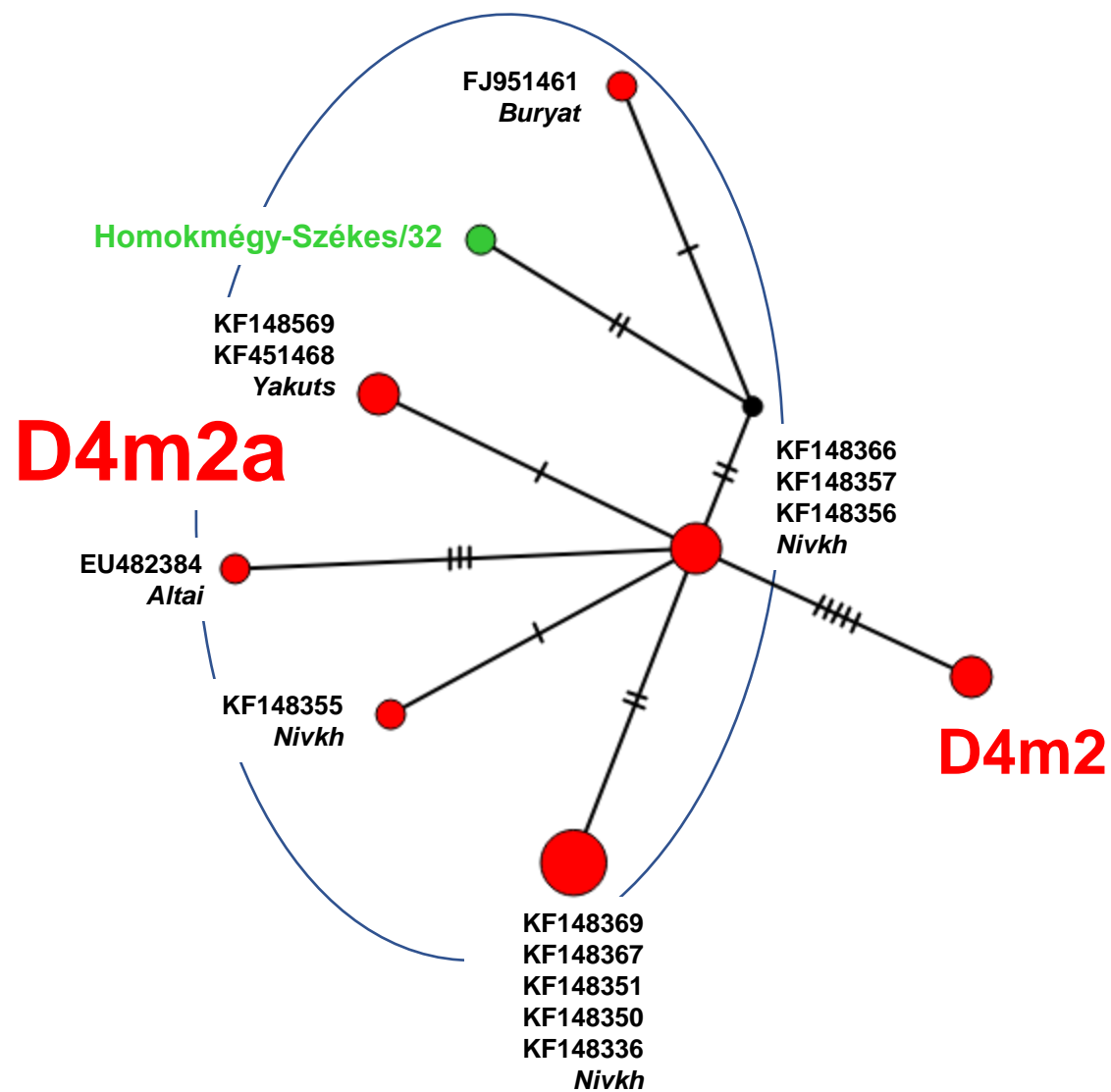
TAV005  
Late Middle Ages  
Mongol,  
Mongolia

D4j+16311

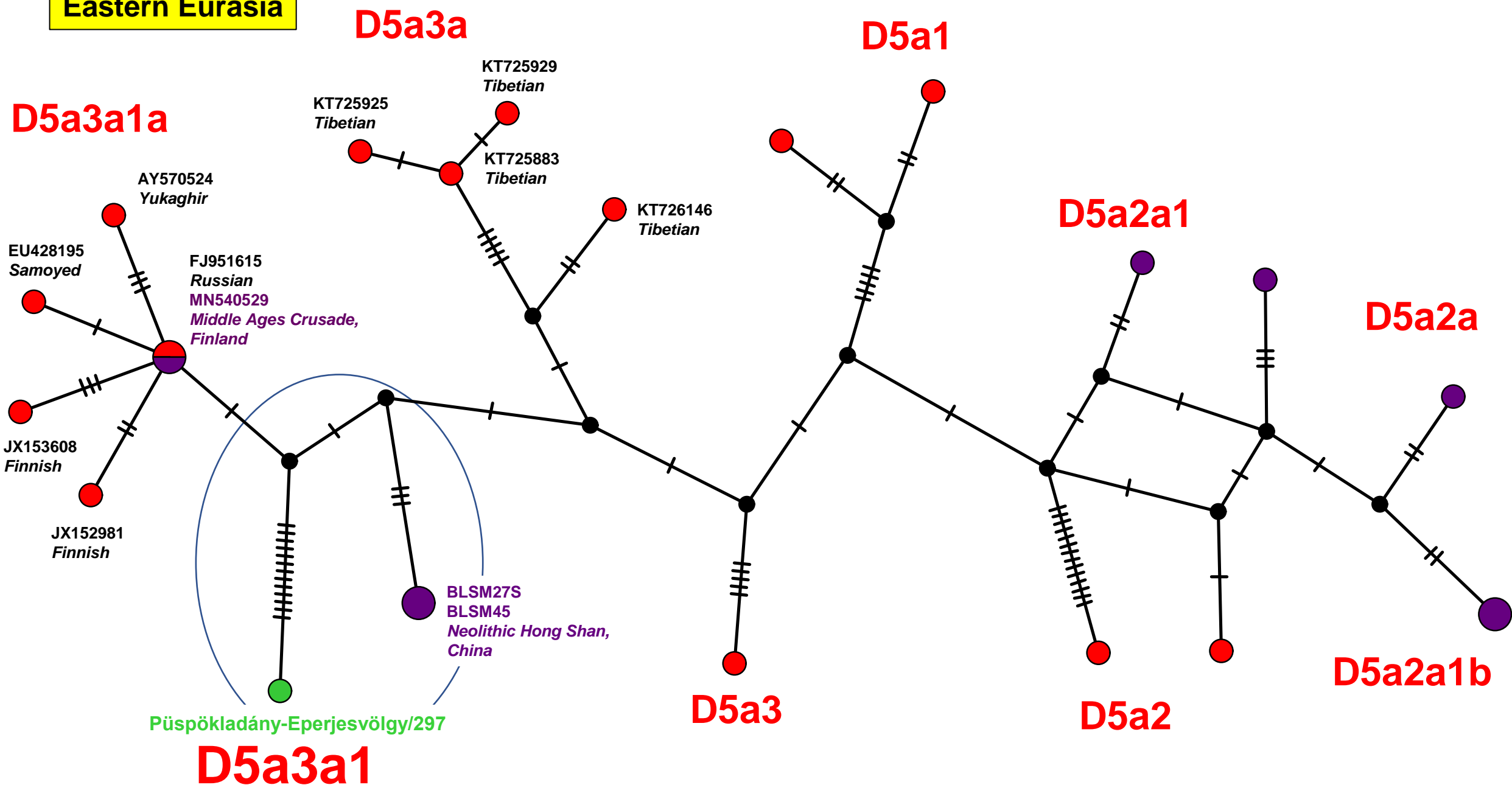
Sárrétudvari-Hízófld/143

Eastern Eurasia

Eastern Eurasia



Eastern Eurasia



Eurasia

H

KF451200  
KF451255  
KF451259  
Near Easterns

KX702182  
Armenian

KX784189  
Armenian

KF451222  
Near Eastern

KX230570  
Armenian

I7042  
Bronze Age,  
Hungary

AY738949  
Italian

KJ739542  
Russian

DQ523677  
Sardinian

MN540552  
MN540554  
Post-Medieval,  
Finland

KF161283  
Danish

Magyarhomorog-Könyadomb/50  
Magyarhomorog-Könyadomb/51

MN687298  
Umbri,  
Italy

JQ324789  
Basque

HM852822  
Iranian

KF451145  
Arab

KF161623  
Danish

Homokmégy-Székes/274

Vörs-Papkert-B/296

KC911467  
Iranian

HUN169  
Hungarian

KC911591  
Iranian

Ibrány-Esbóhalom/79

HM852760  
Armenian

HM852787  
Azeri

Vörs-Papkert-B/40

HUN076  
Hungarian

Central circle:

Vörs-Papkert-B/264

Arm37  
Iron Age,  
Armenia  
ART004  
Late Chalcolithic,  
Turkey  
I0023  
Linear Pottery,  
Germany  
I0726  
Neolithic,  
Turkey  
I12984  
Iron Age,  
Pakistan  
MN687299  
Umbri,  
Italy  
XN167  
XN170  
XN172  
XN225

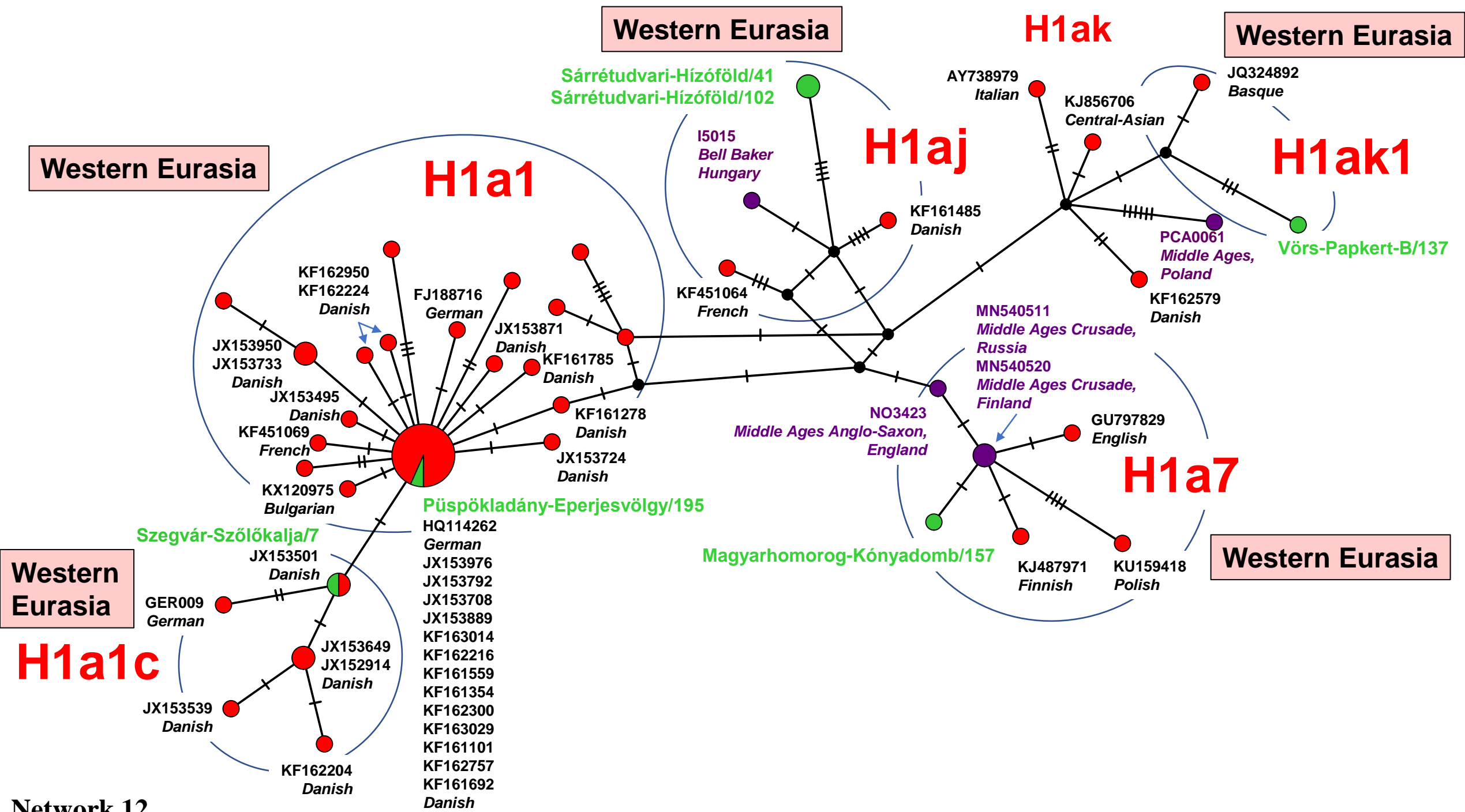
Neolithic farmer,  
Germany  
I2521  
I3879  
Neolithic,  
Bulgaria  
I2520  
Bronze Age,  
Bulgaria  
I2423  
Late Chalcolithic,  
Bulgaria  
I2788  
Late Copper Age  
Protoboleraz,  
Hungary

I2598  
Bell Baker,  
Great Britain  
I1497  
Neolithic,  
Hungary  
I1381  
Bell Baker,  
France  
KR858867  
Finnish  
KF162040  
Danish  
HM852864  
Turkish  
HM852837  
Iranian  
HM852795  
Azeri  
KX784187  
Armenian

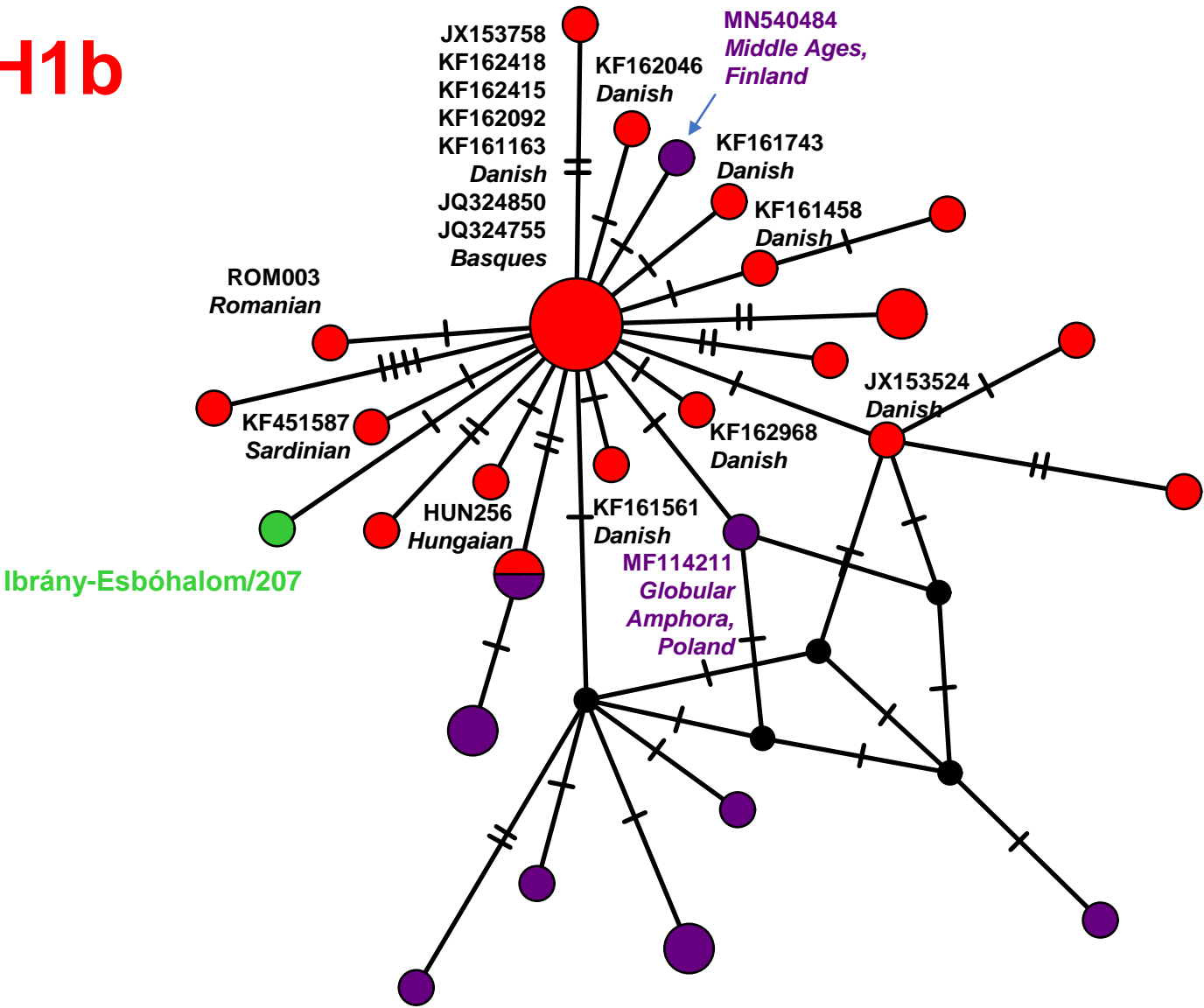
Eurasia

H+16291

Network 11



H1b

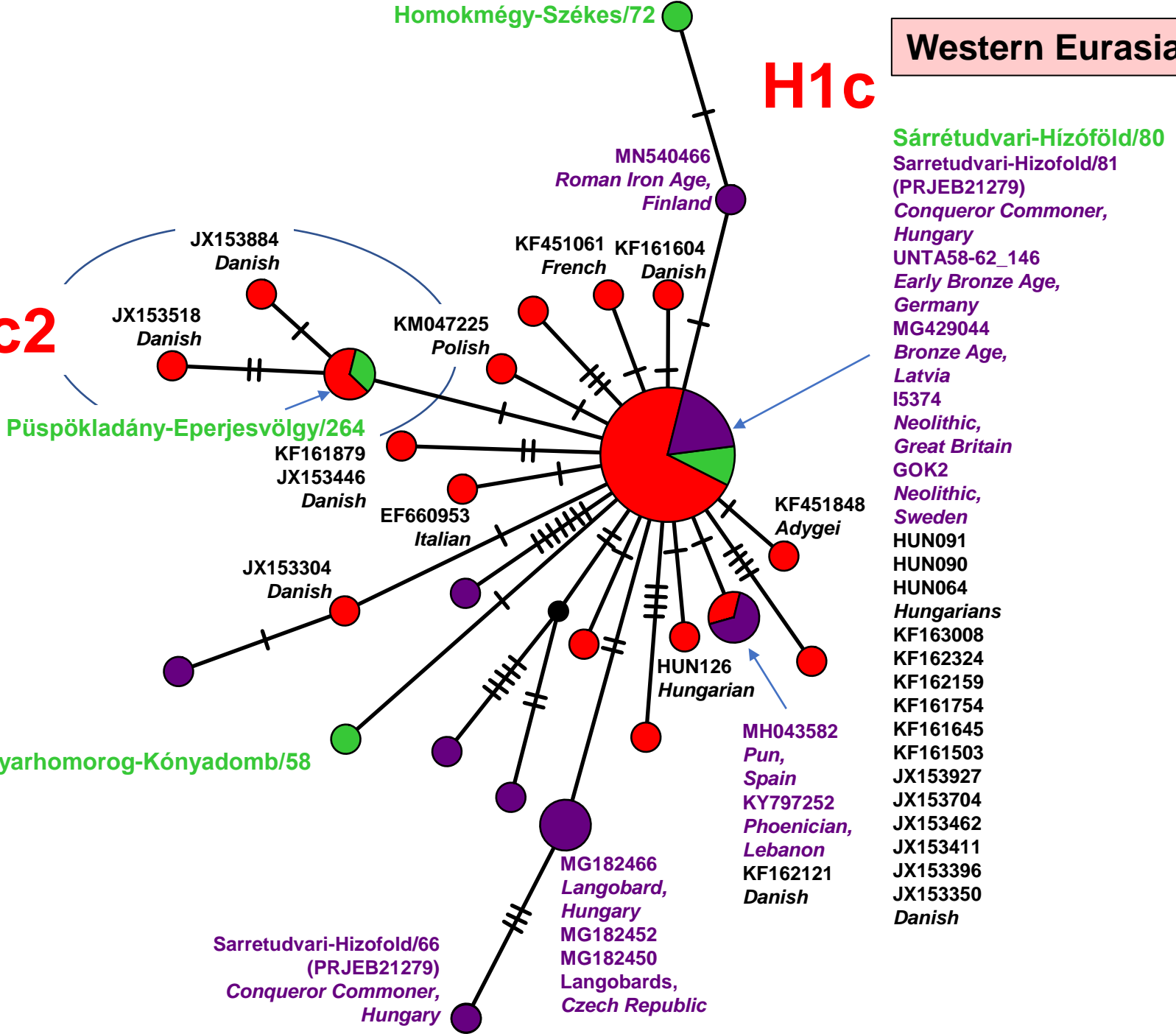


Western Eurasia

Western Eurasia

H1c2

H1c







Western Eurasia

H1q

Püspökladány-Eperjesvölgy/384

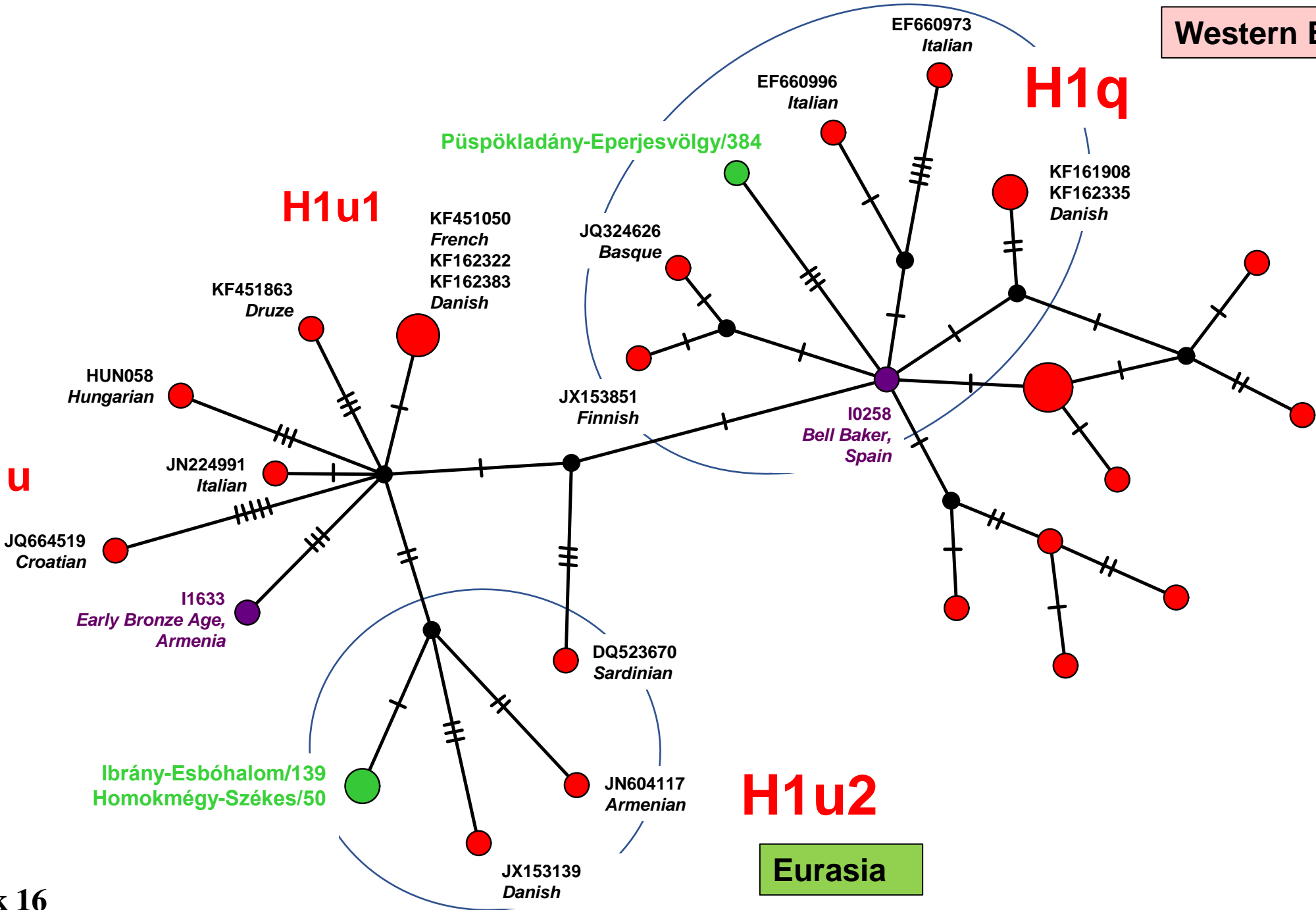
H1u1

H1u

10258  
Bell Baker,  
Spain

H1u2

Eurasia

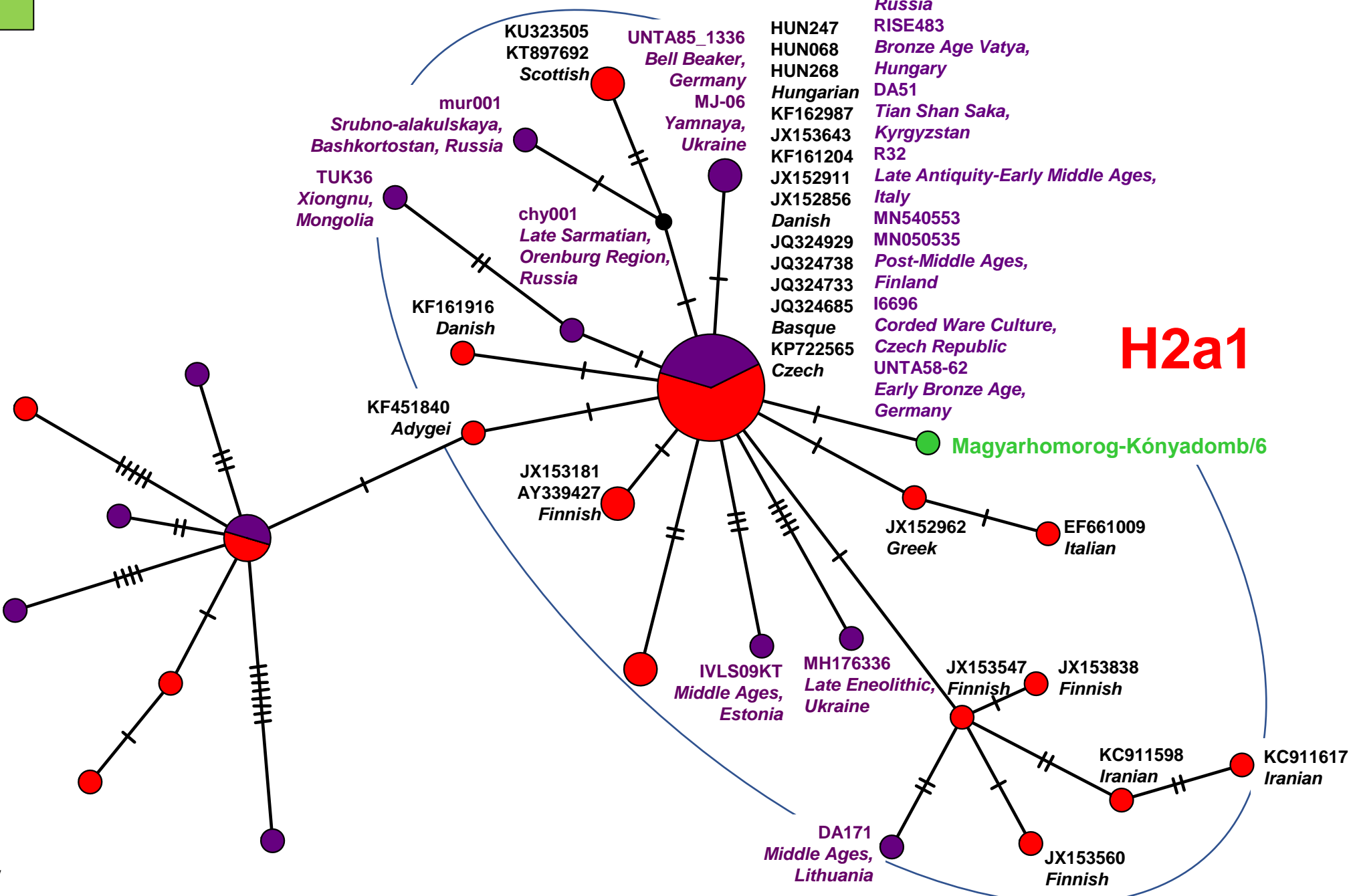


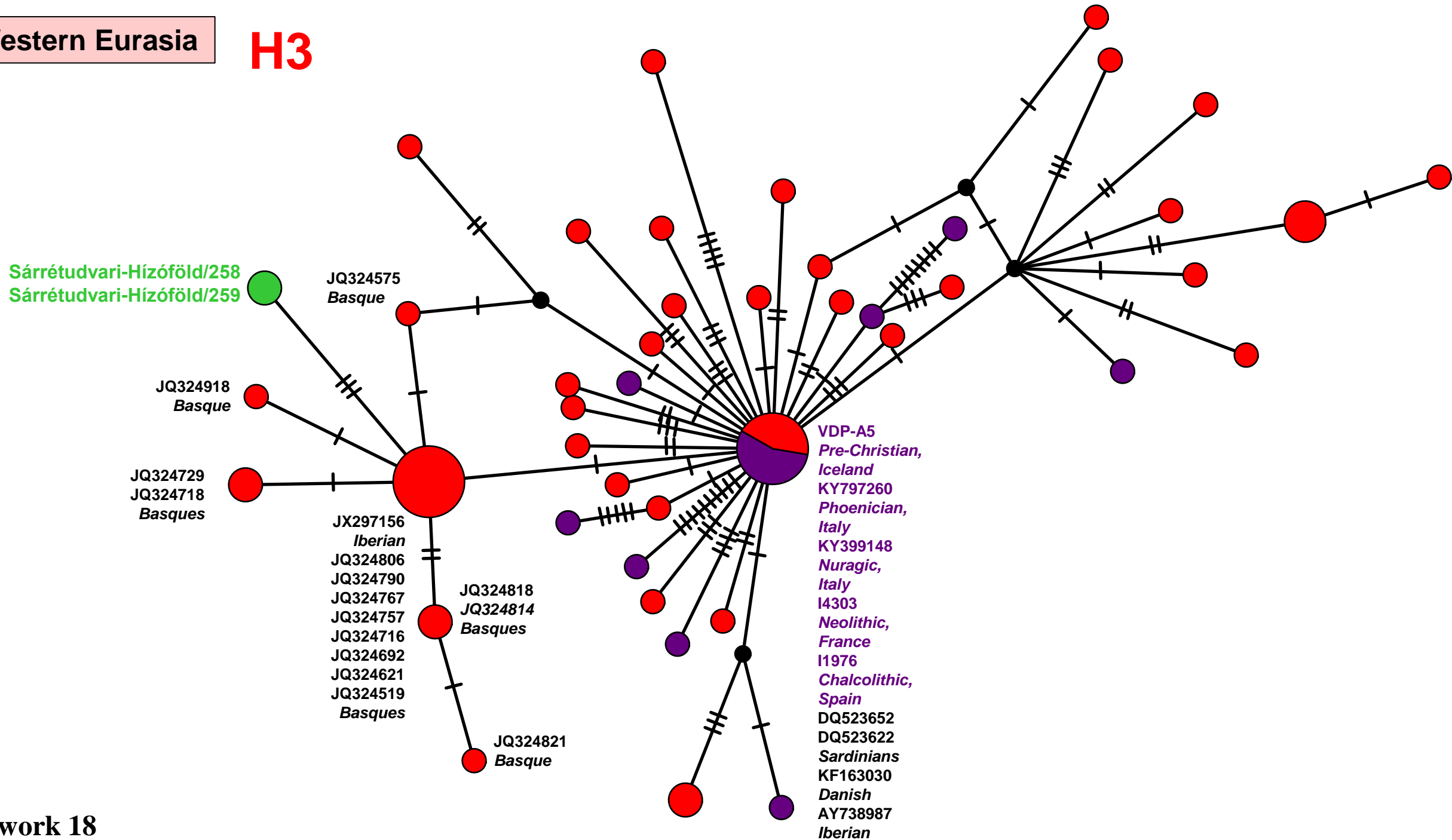
Eurasia

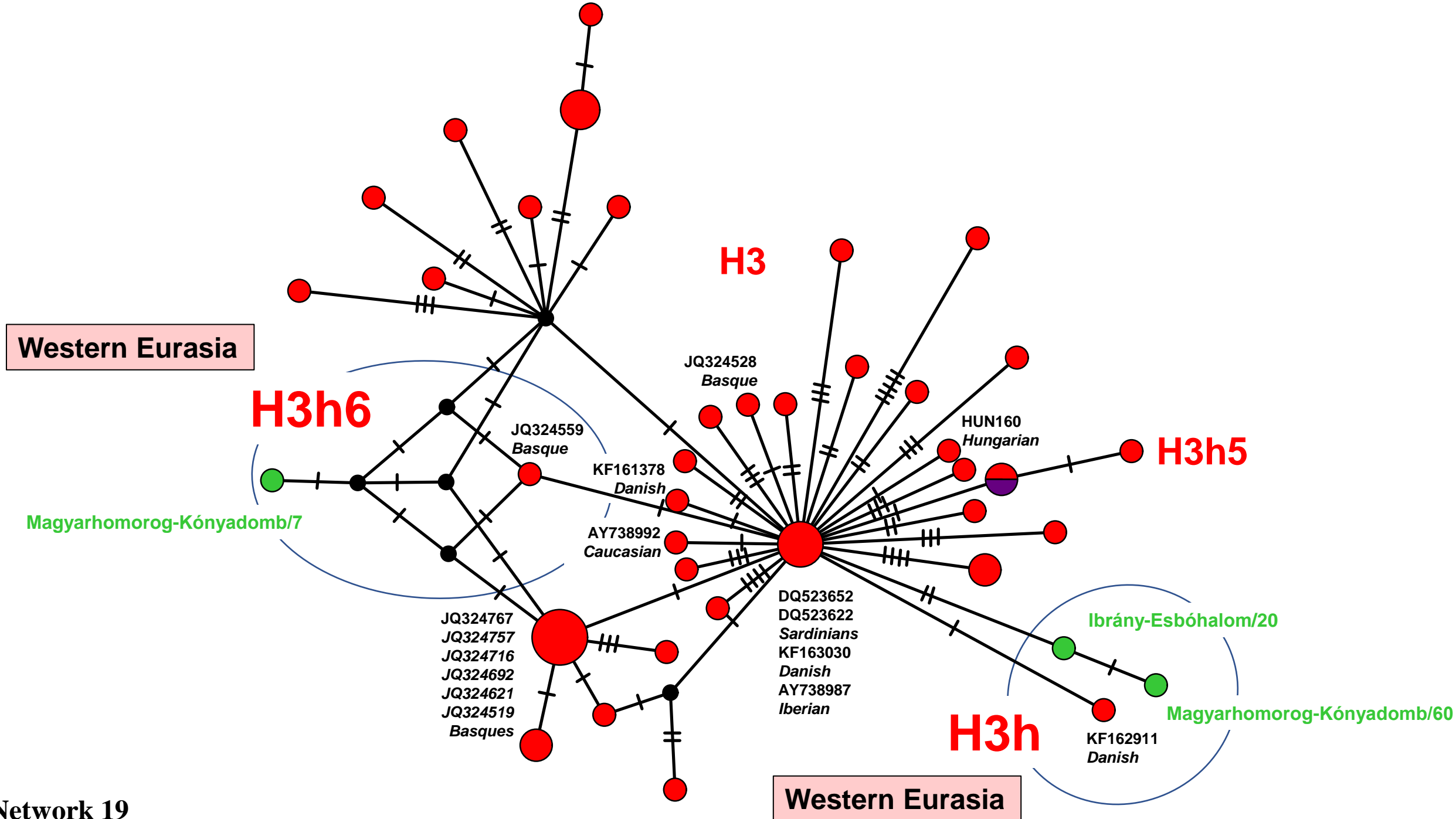
H2a

H2a1

AY2003  
Steppe Maykop  
Russia  
RISE483  
Bronze Age Vatya,  
Hungary  
DA51  
Tian Shan Saka,  
Kyrgyzstan  
R32  
Late Antiquity-Early Middle Ages,  
Italy  
MN540553  
MN050535  
Post-Middle Ages,  
Finland  
I6696  
Corded Ware Culture,  
Czech Republic  
UNTA58-62  
Early Bronze Age,  
Germany  
Magyarhomorog-Könyadomb/6

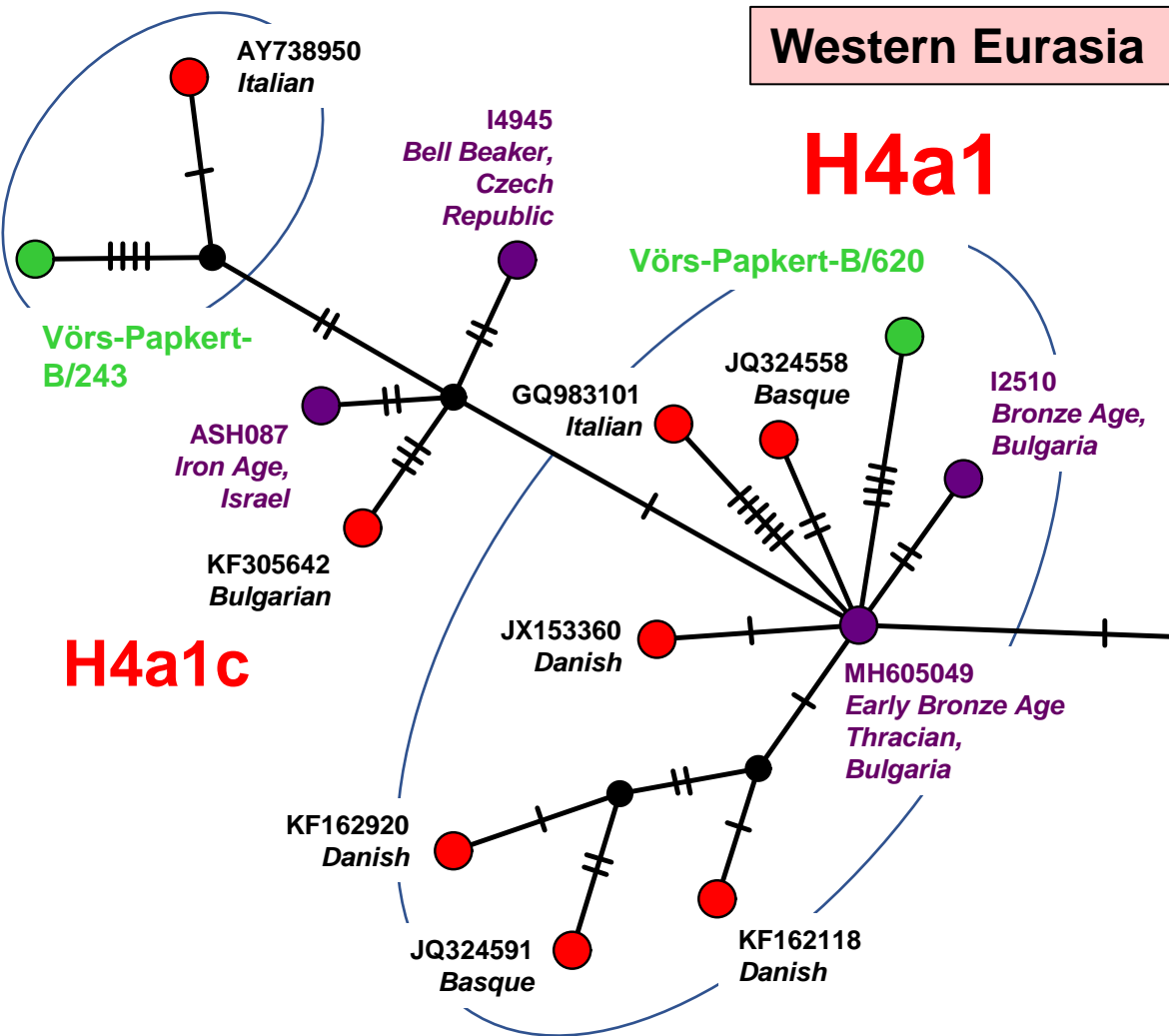




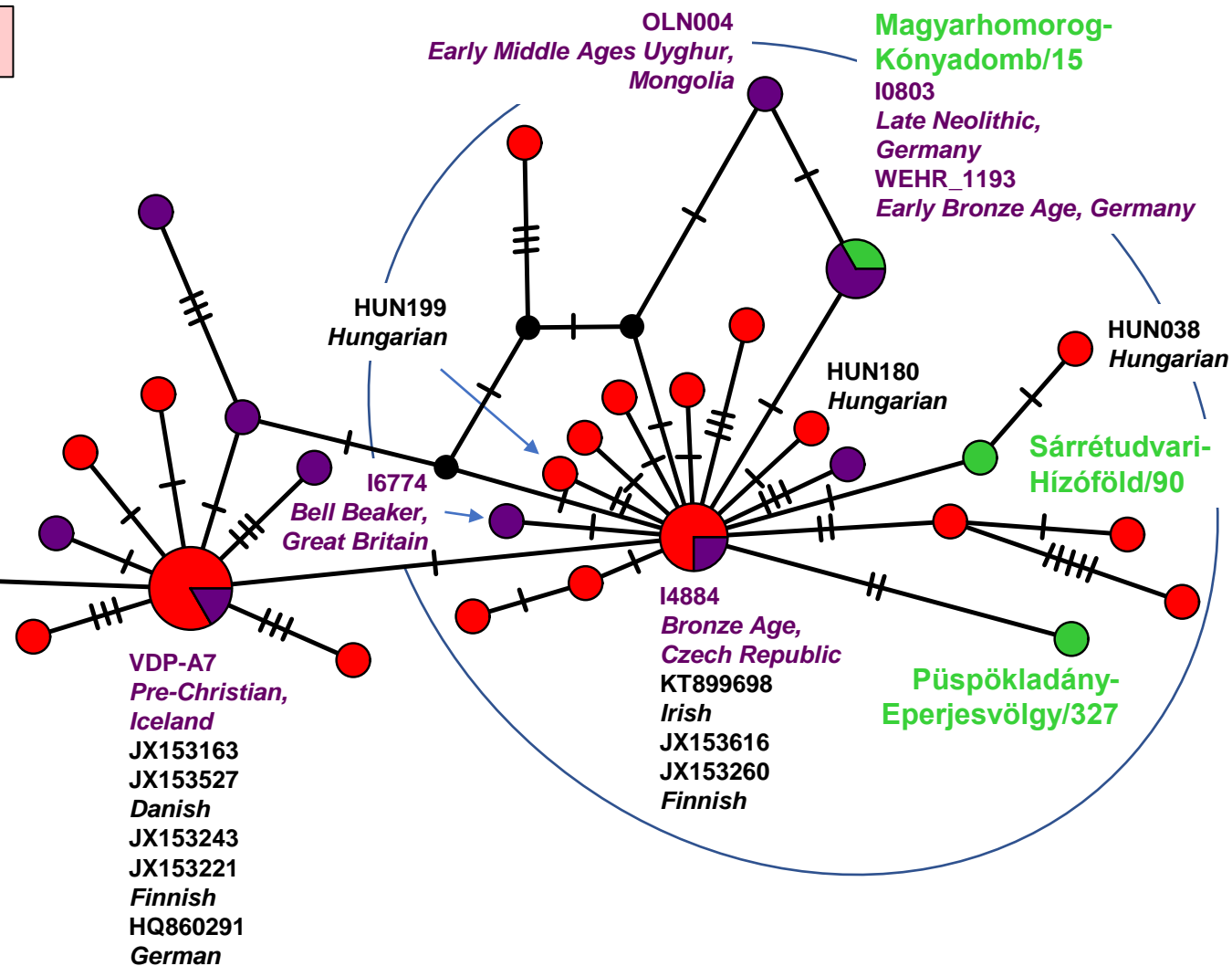


Network 19

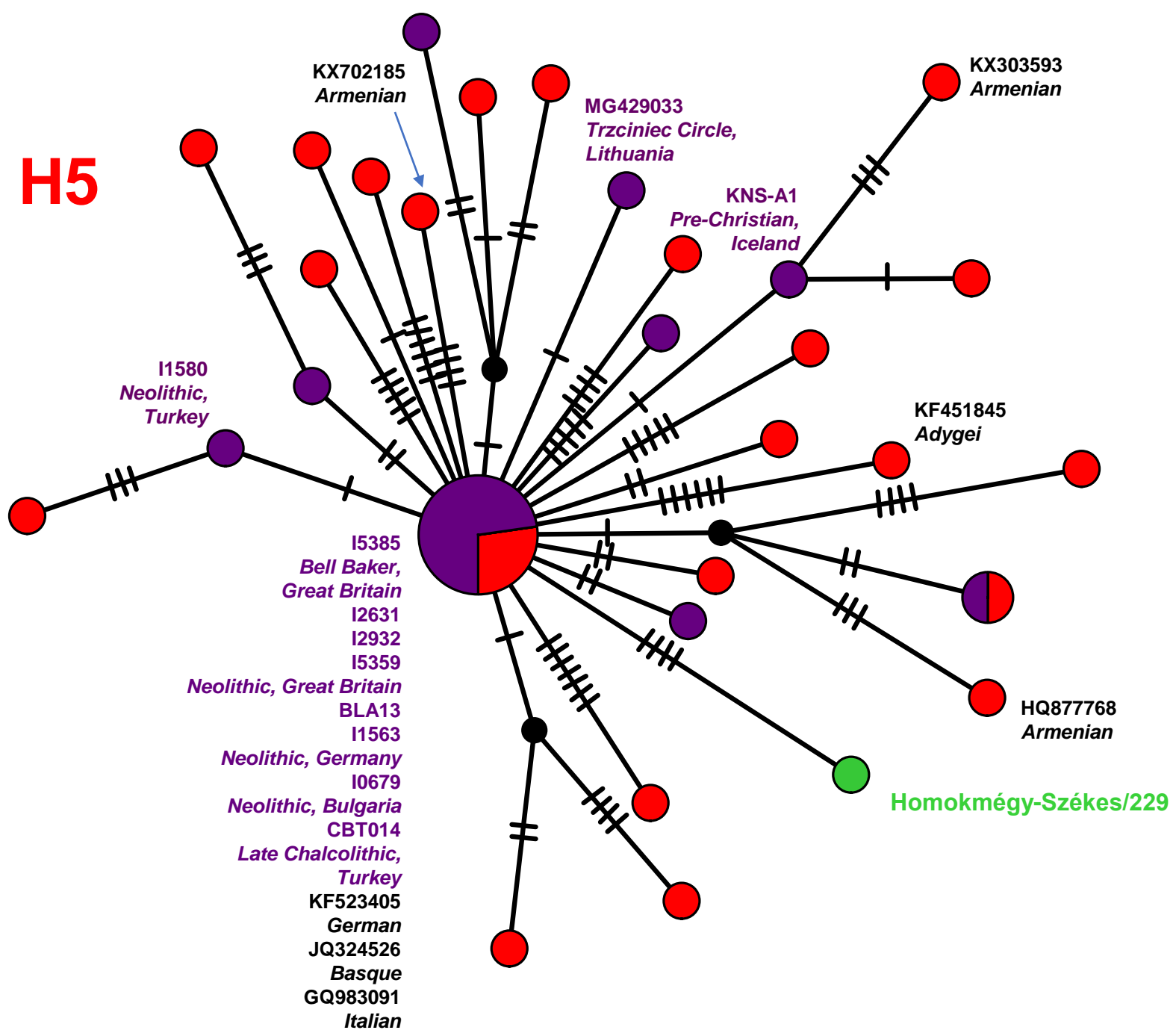
# H4a1c1a



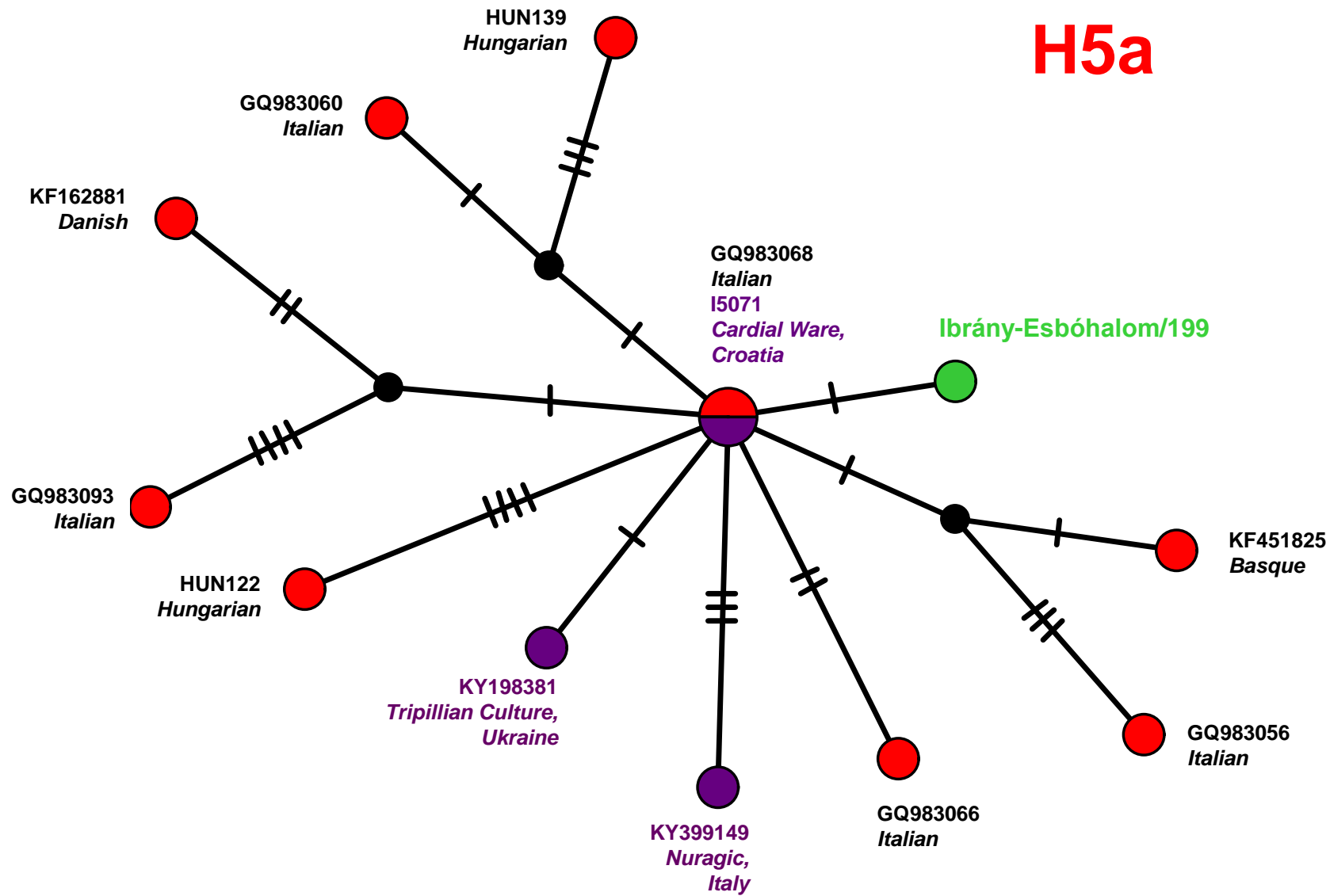
# H4a1a1a



# H4a1a1

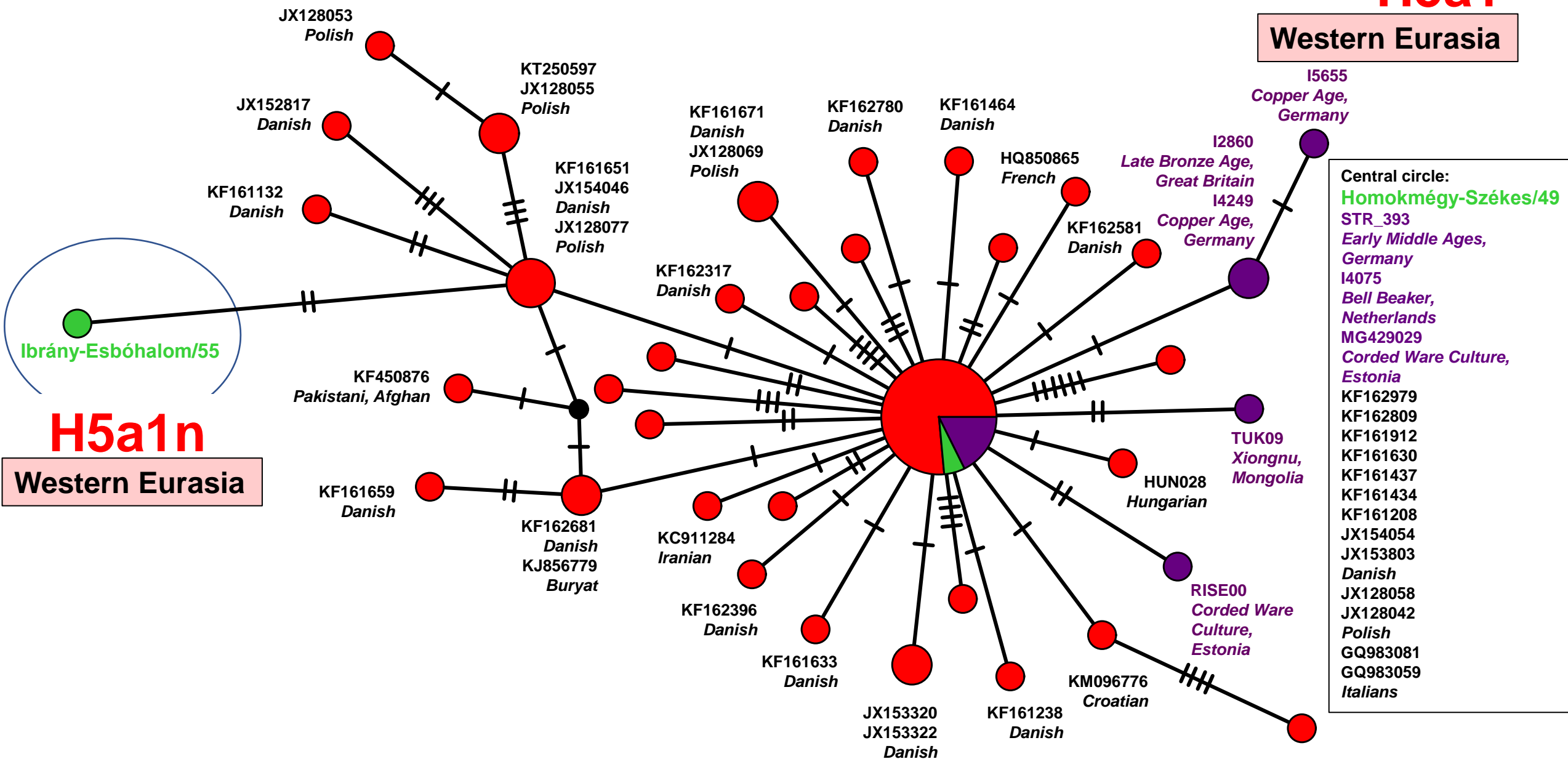


Western Eurasia



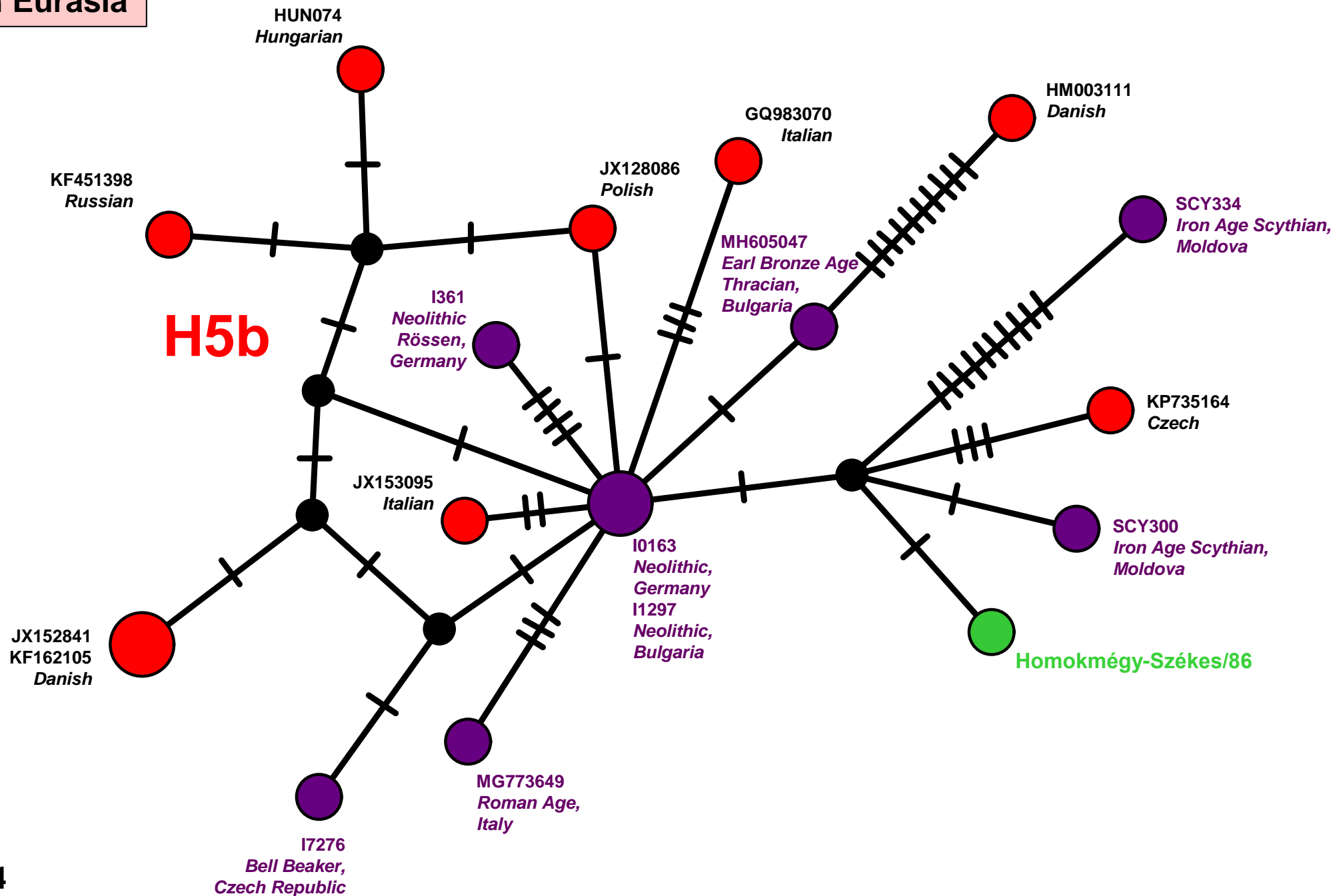
# H5a1

Western Eurasia





# Western Eurasia

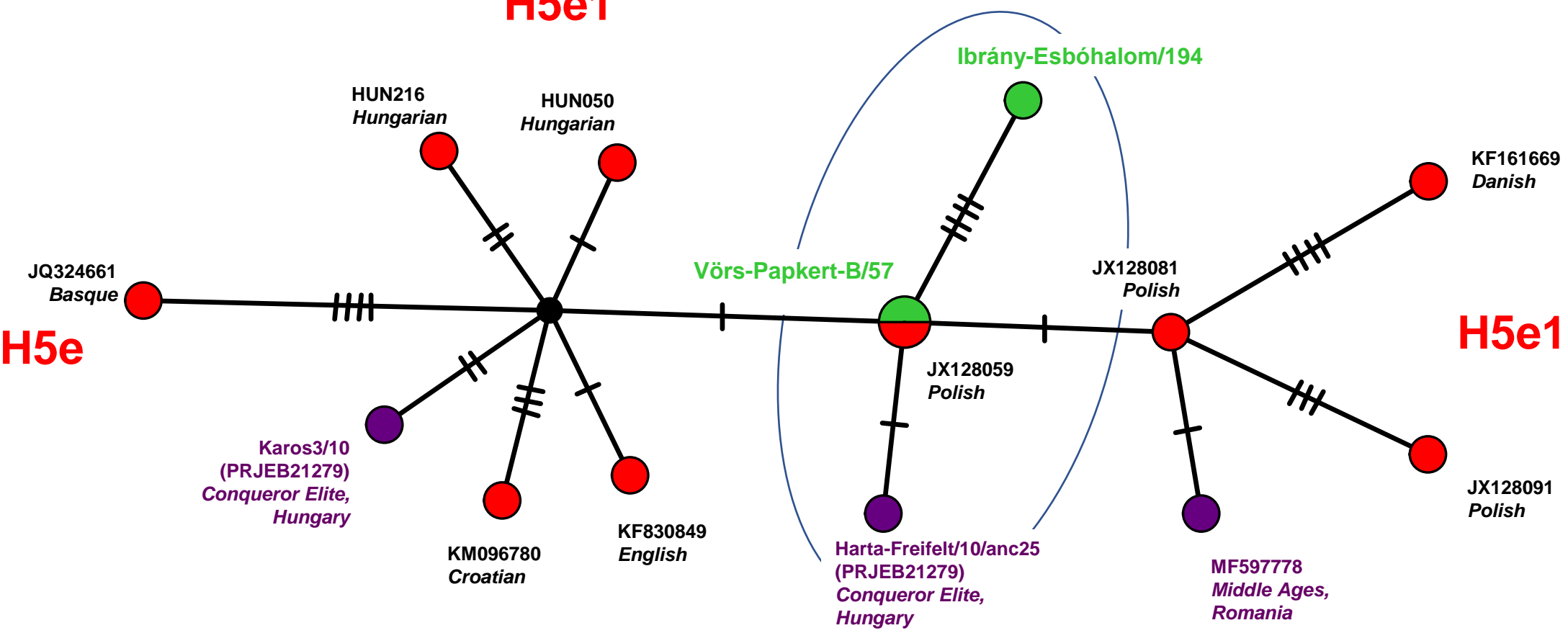


H5e1a

H5e1

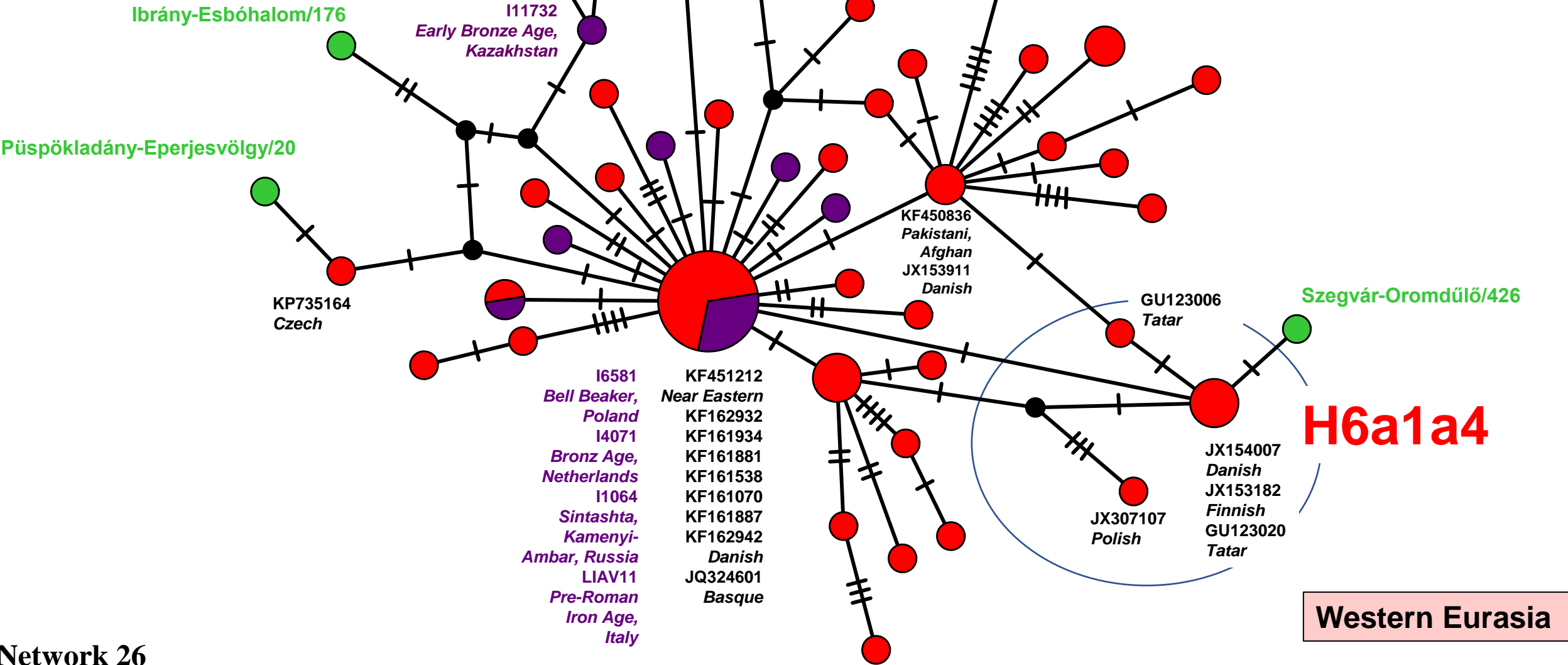
H5e

H5e1a1



Eurasia

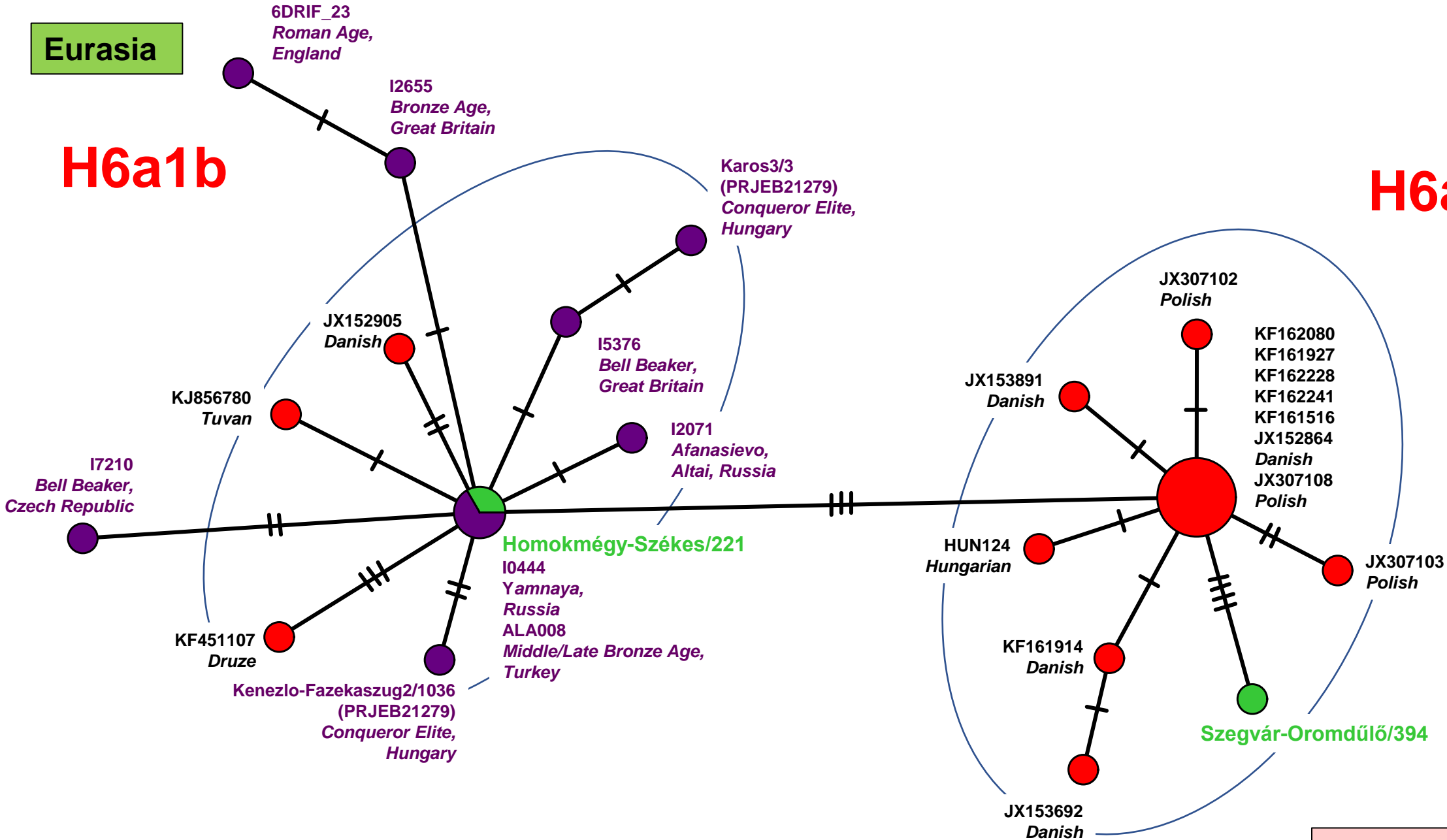
H6a1a



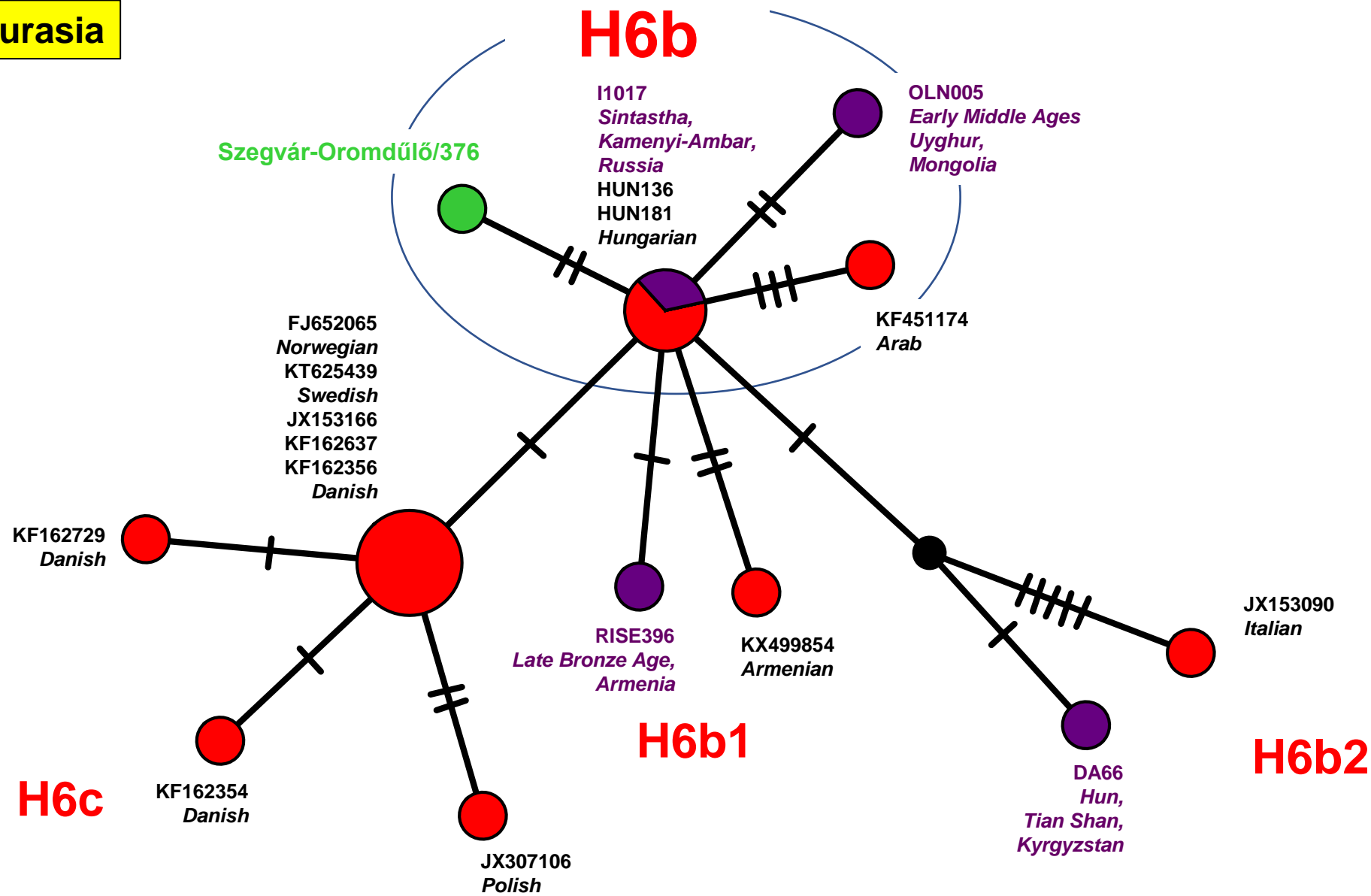
Eurasia

H6a1b

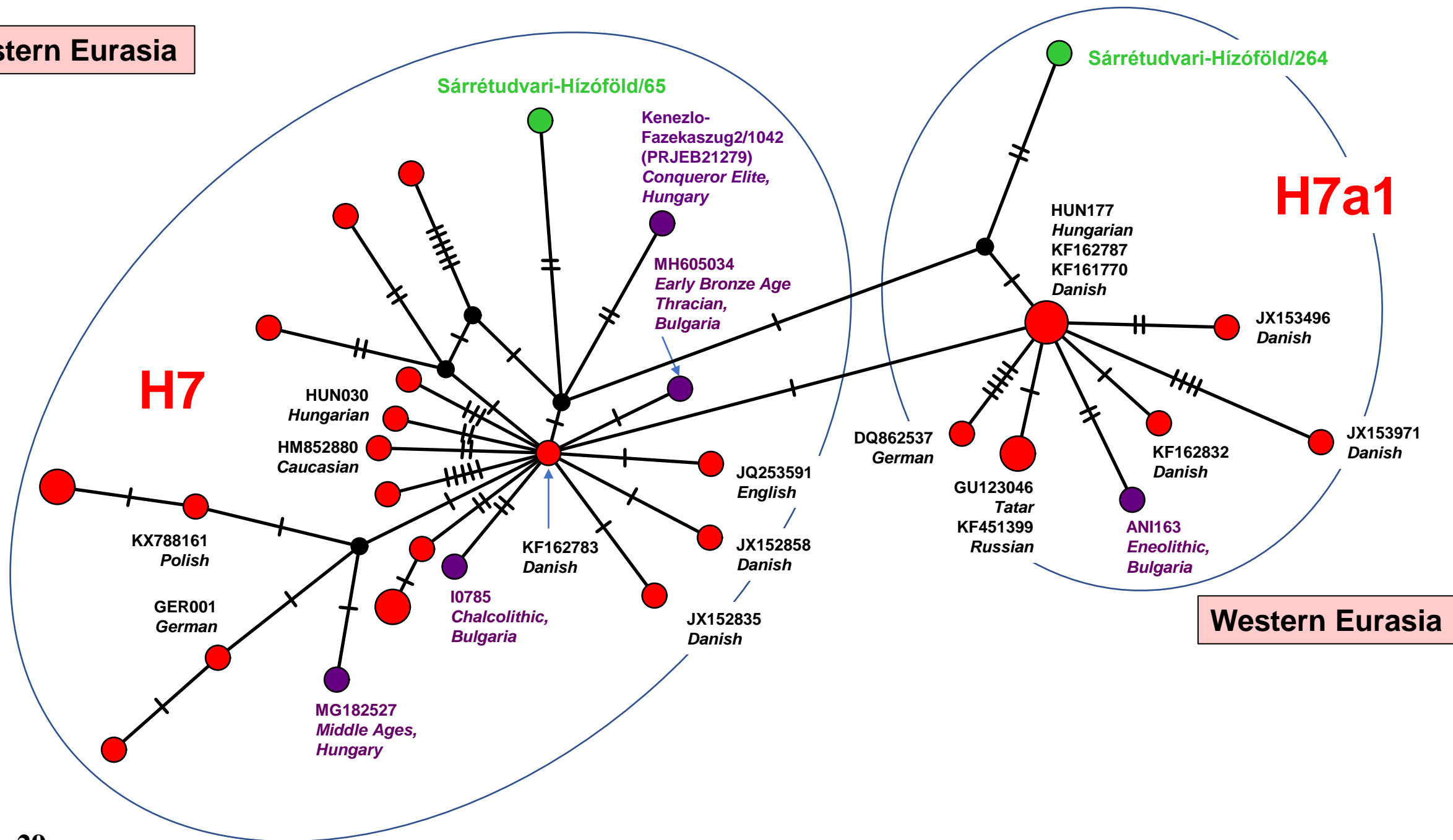
H6a1b3

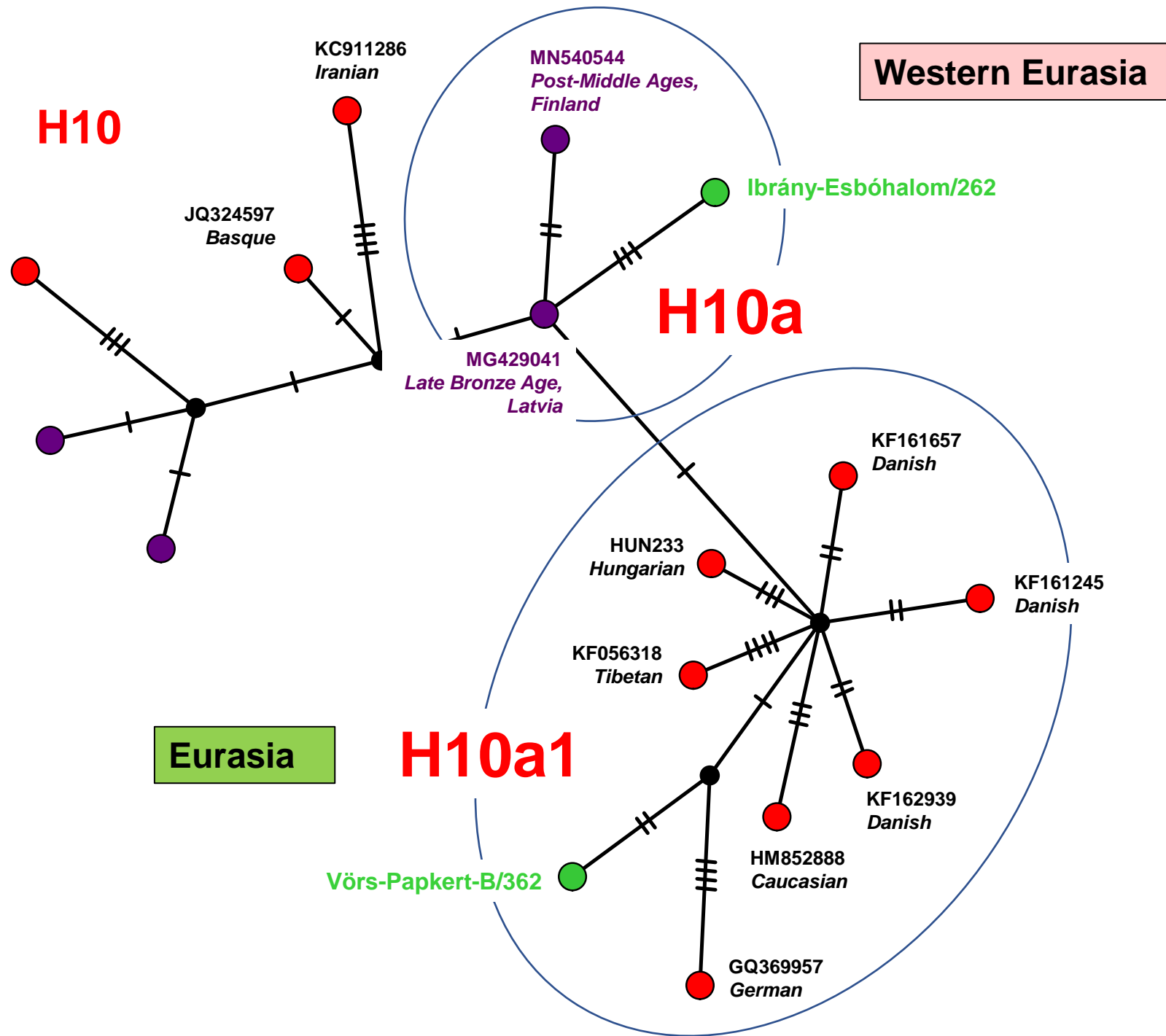


Eastern Eurasia



Western Eurasia





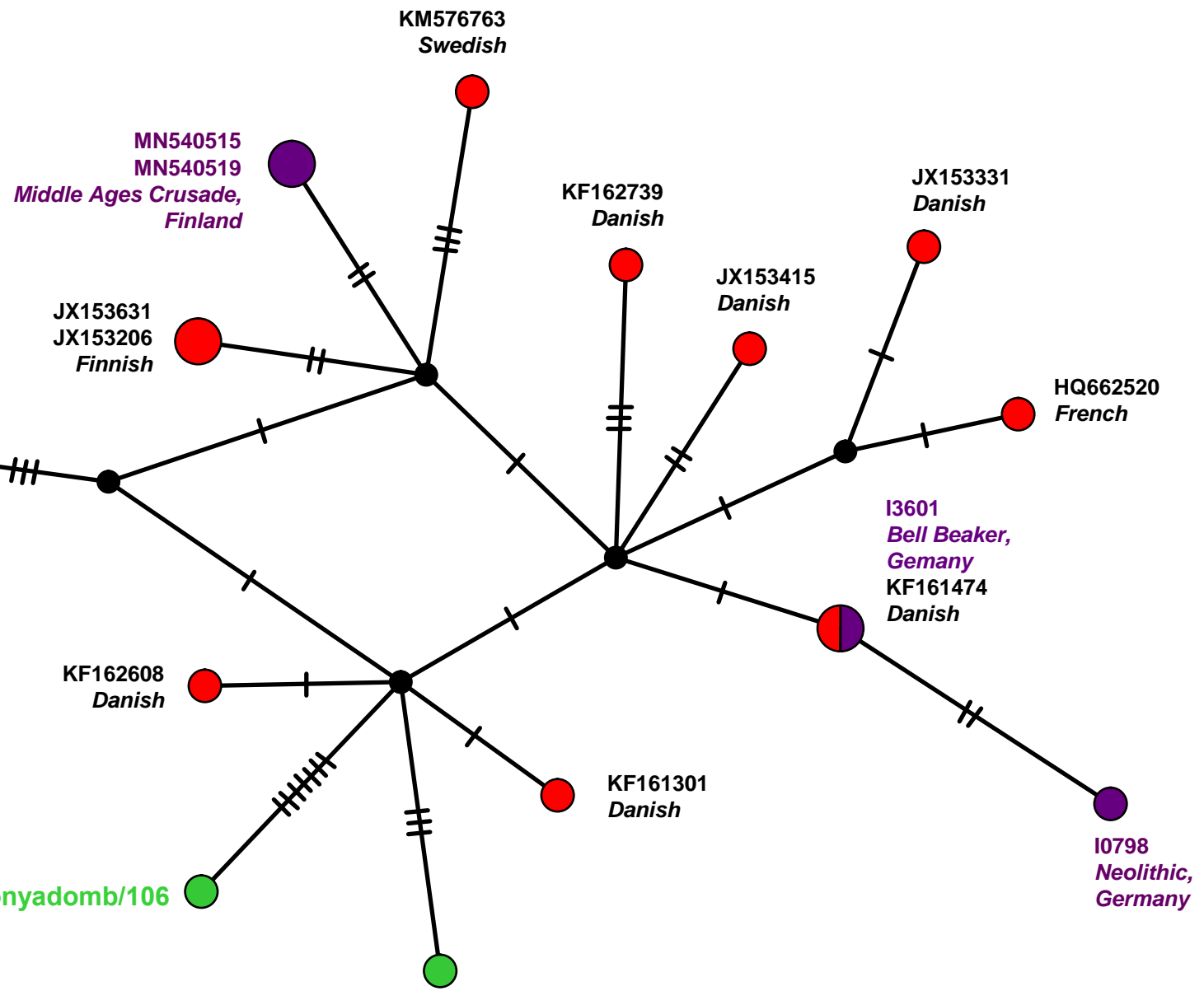
Western Eurasia

H10e

Magyarhomorog-Könyadomb/66

Magyarhomorog-Könyadomb/106

Magyarhomorog-Könyadomb/22

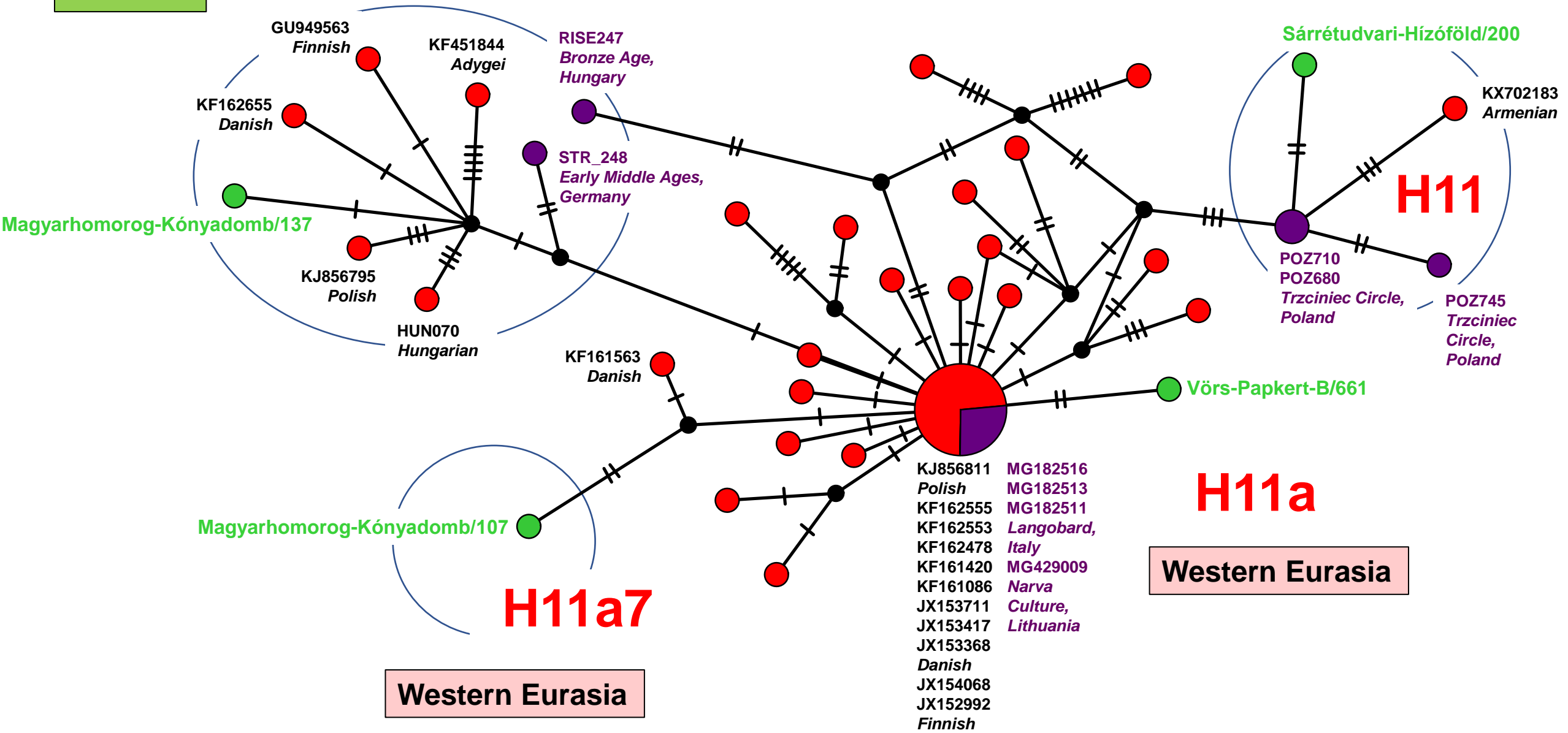




Eurasia

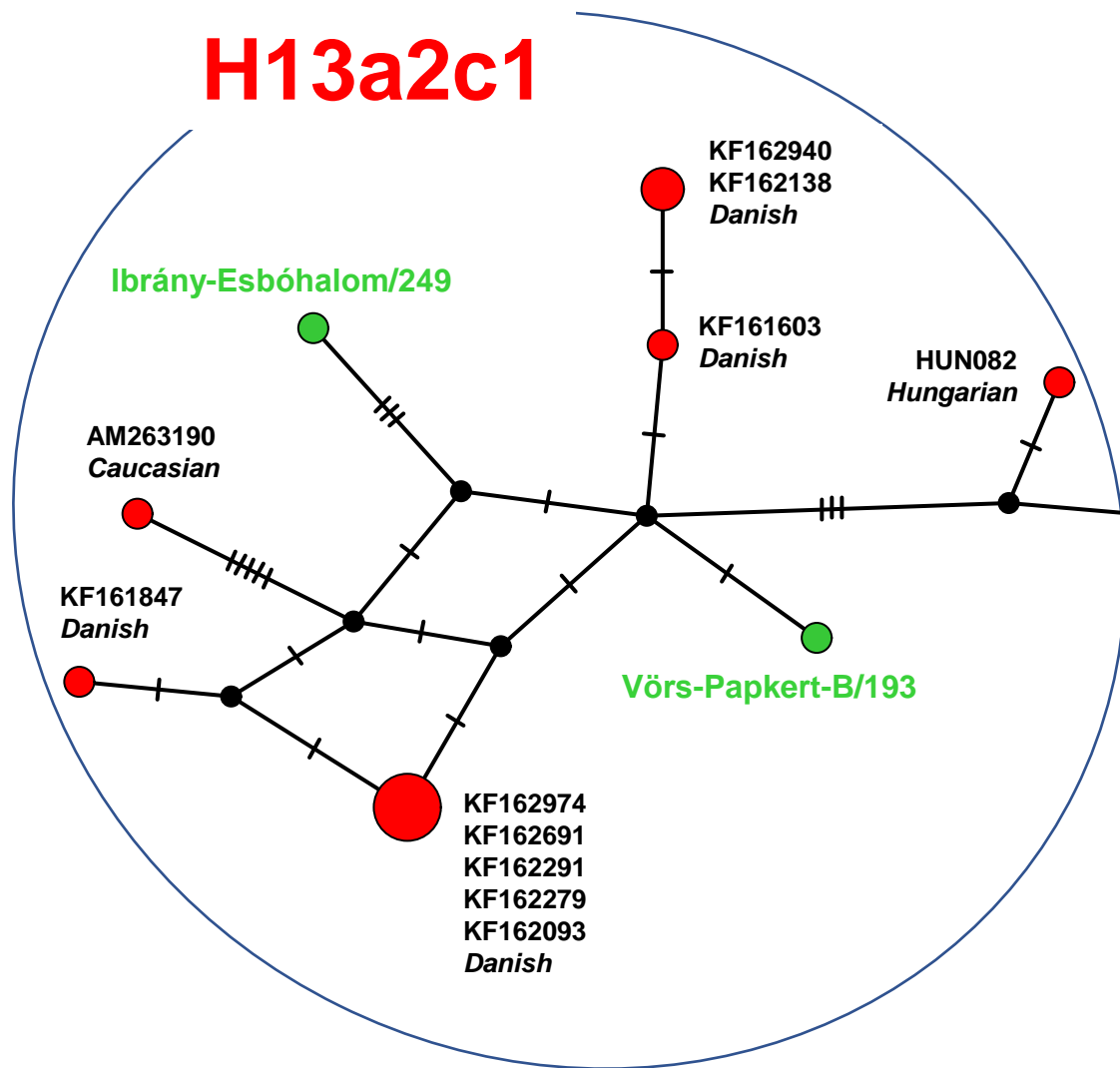
H11a2

Eurasia



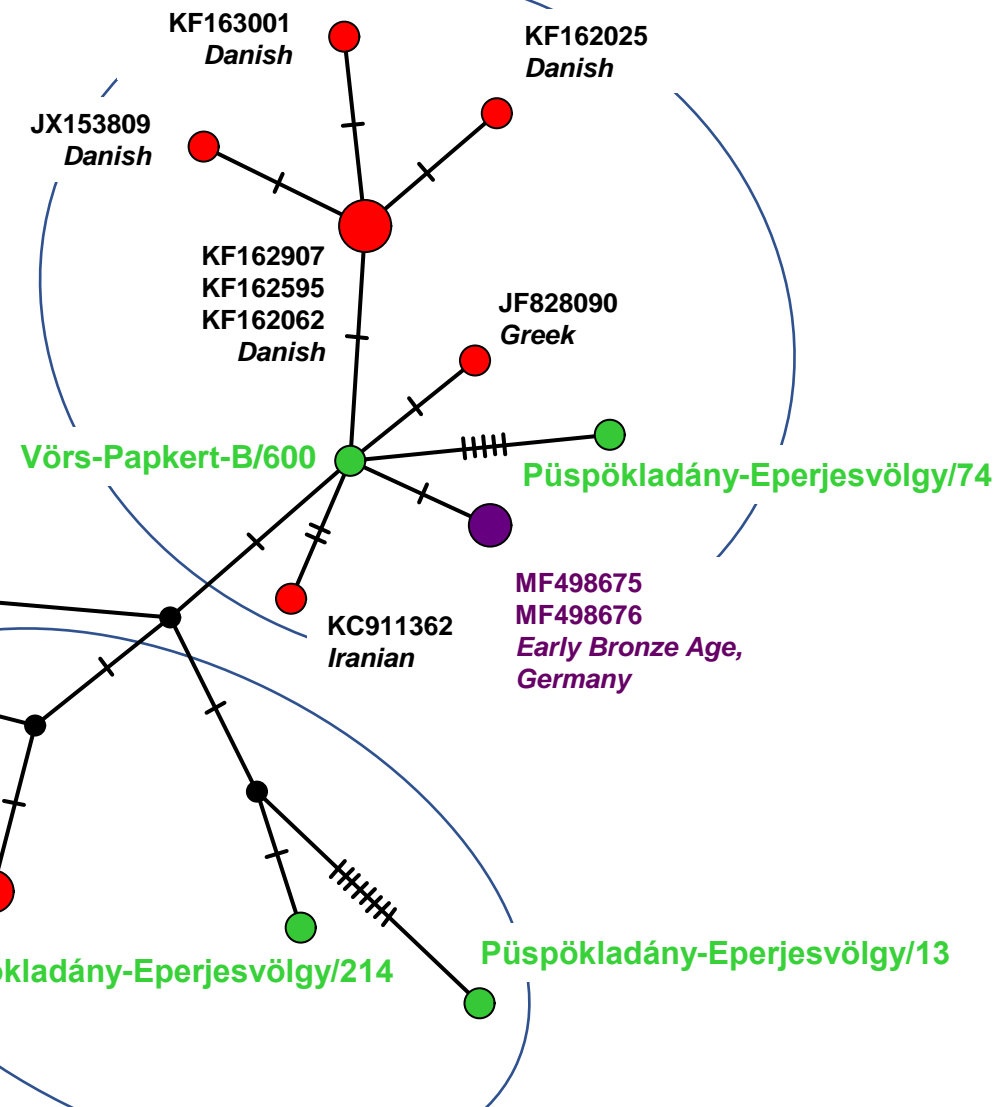
## Western Eurasia

### H13a2c1



## Western Eurasia

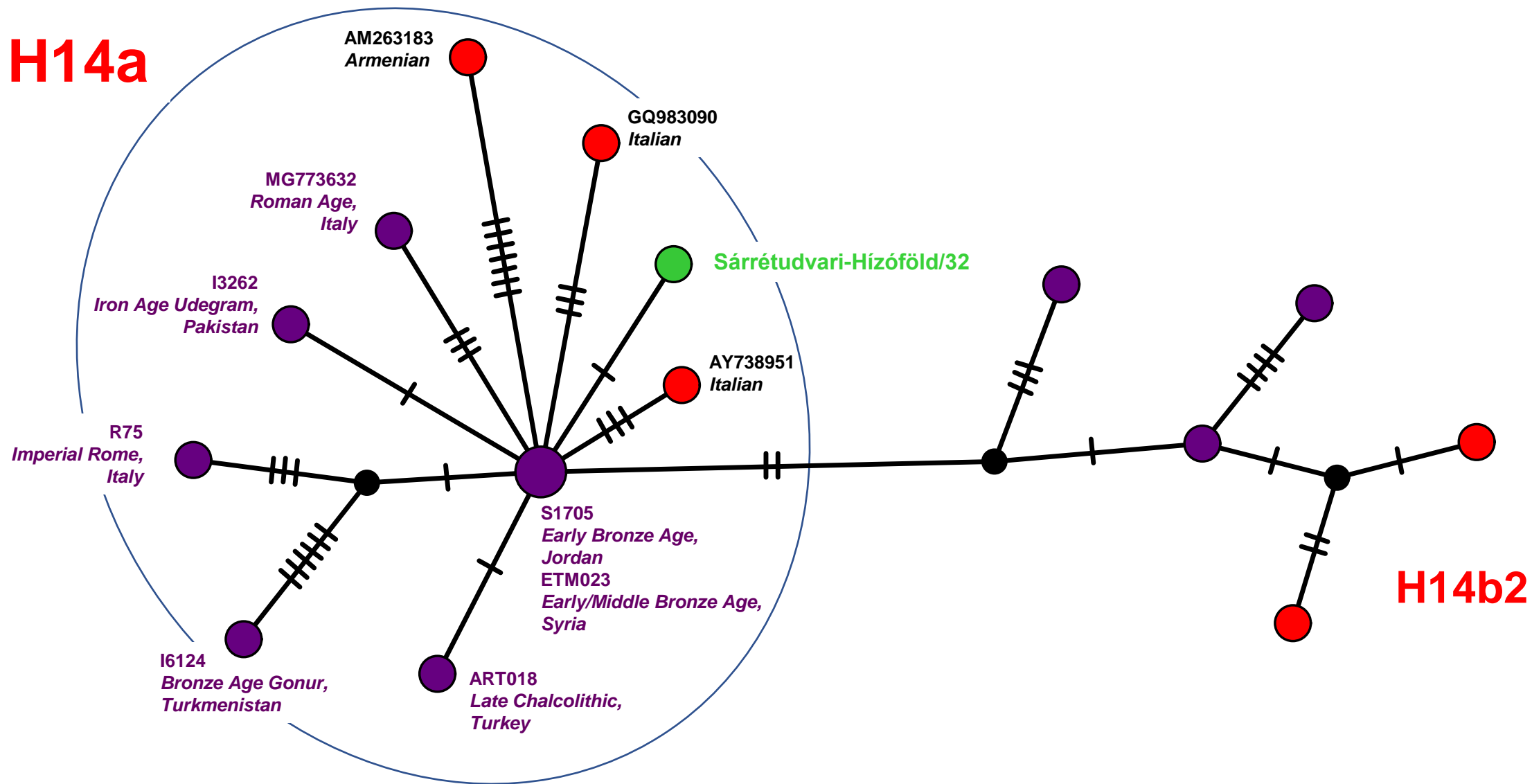
### H13a2b2a



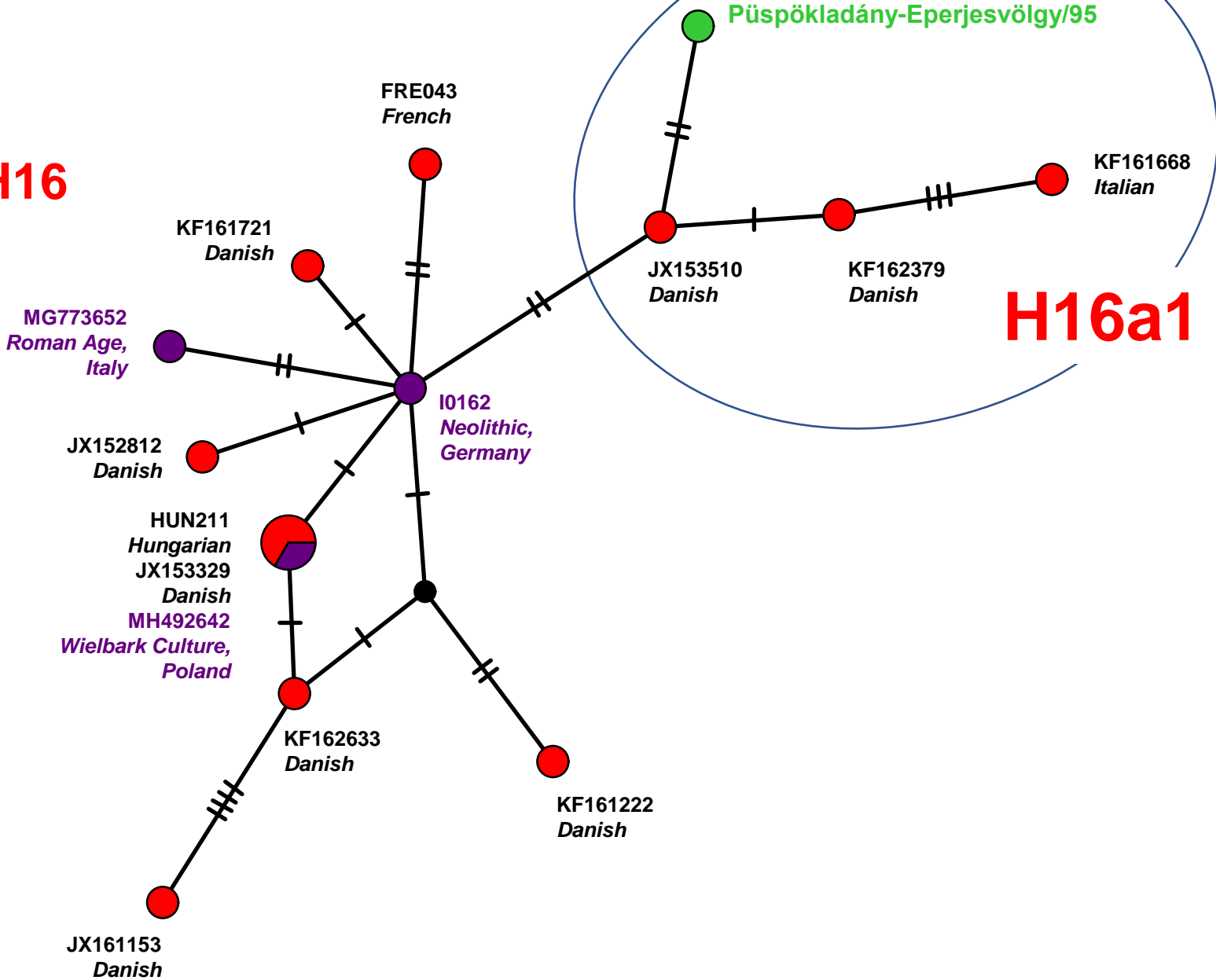
### H13a2b2

## Caucasus/Middle East

H14a



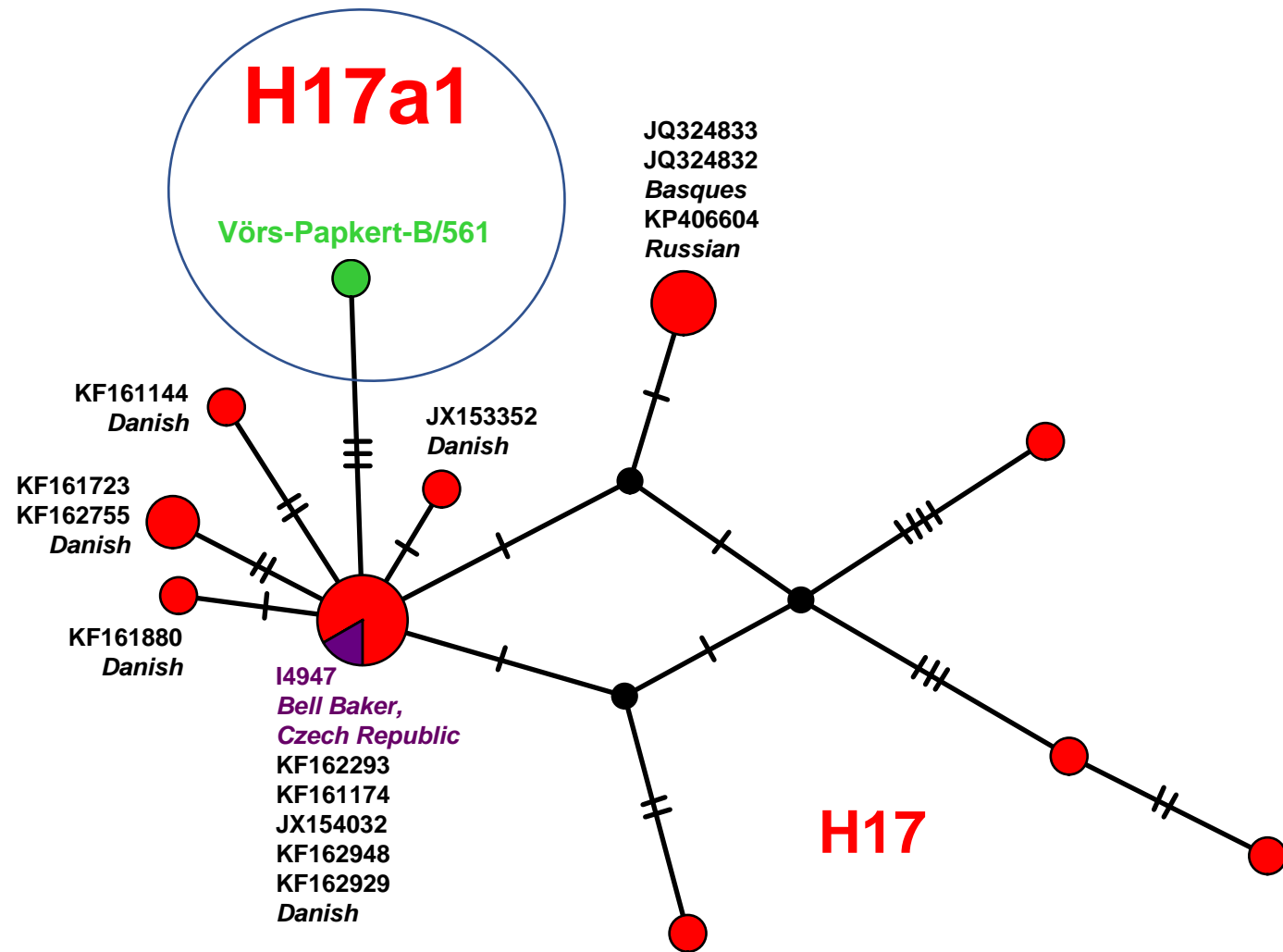
H16



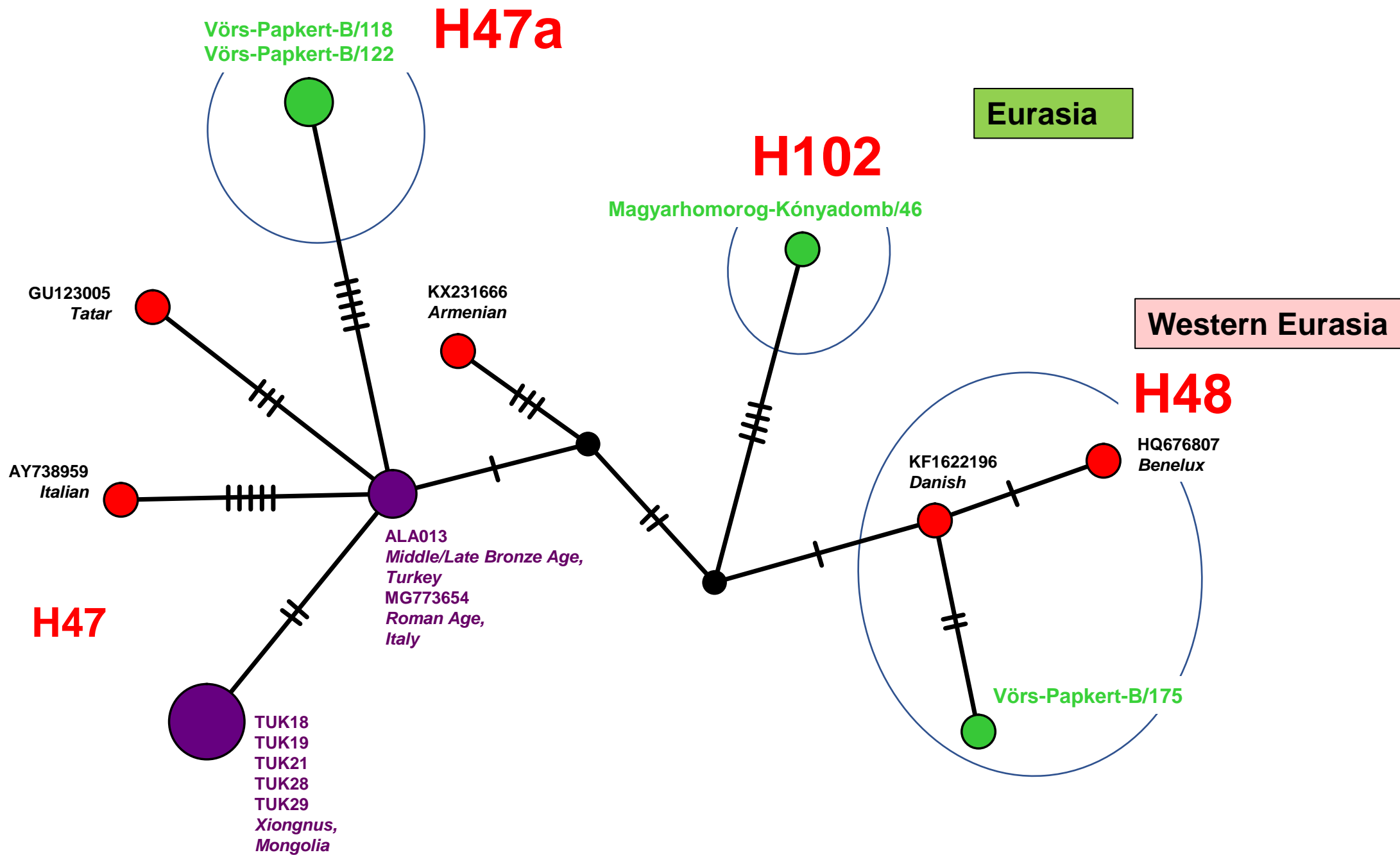
H16a1

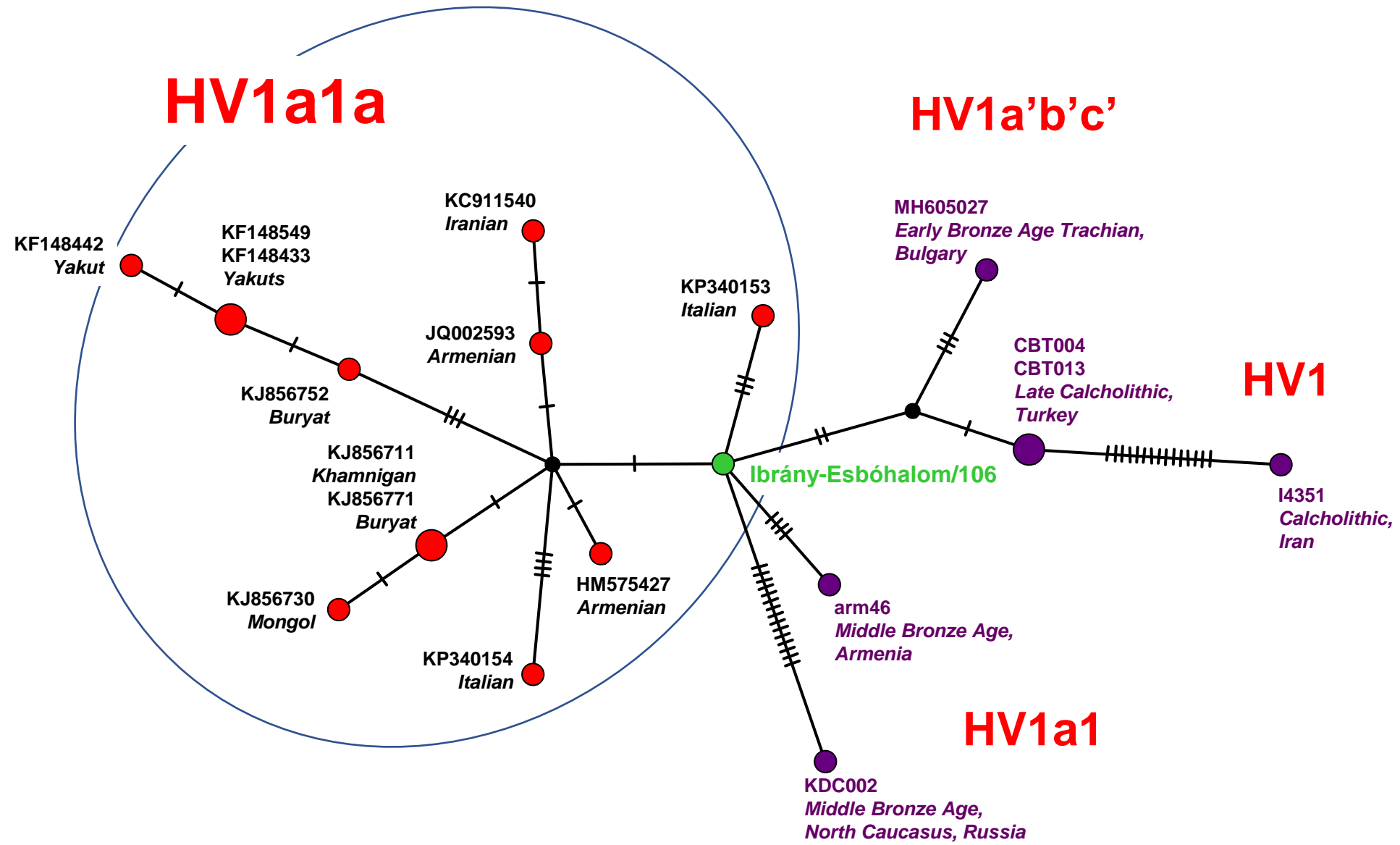
Western Eurasia

H17a

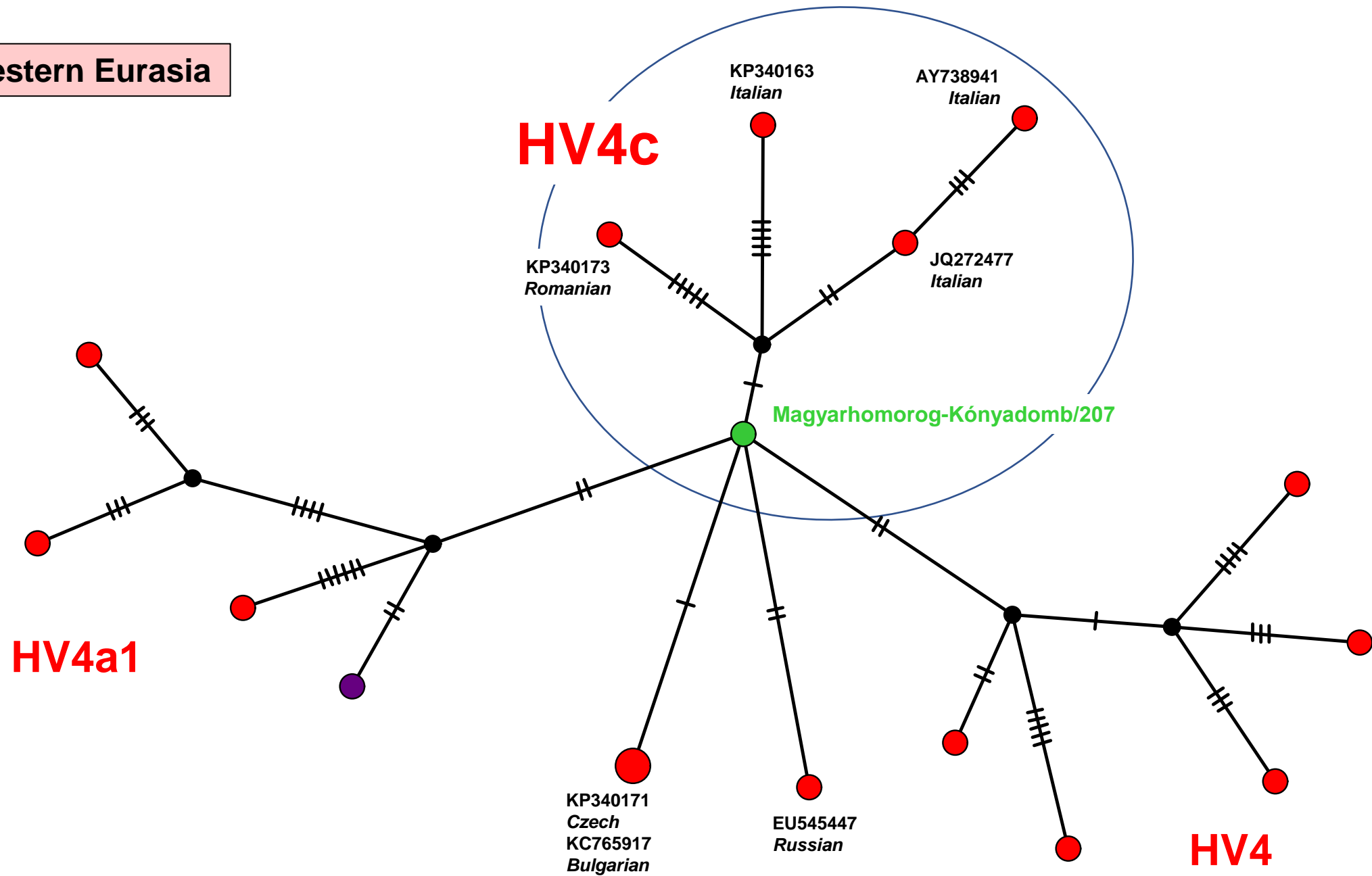


Eurasia



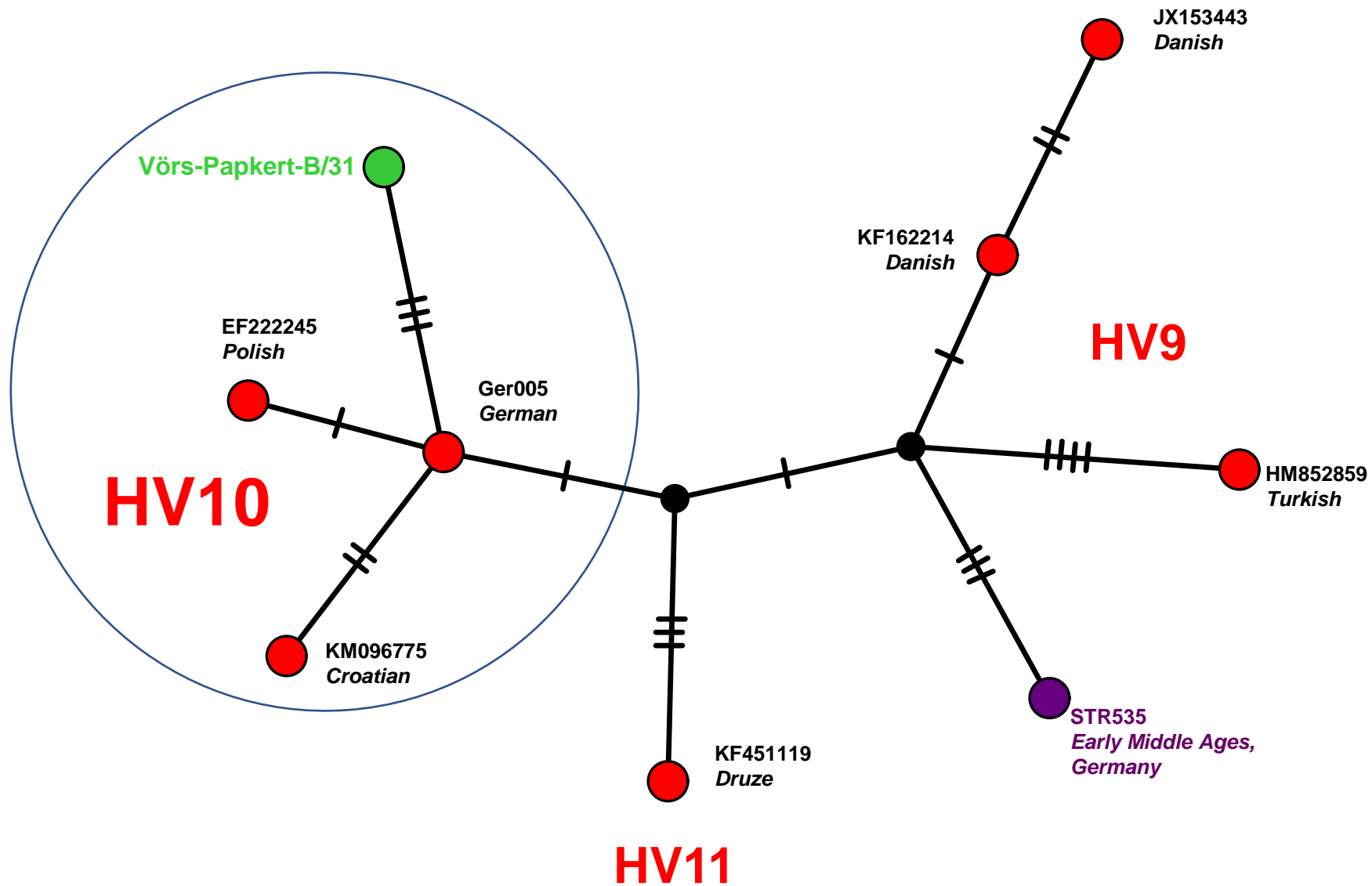


Western Eurasia

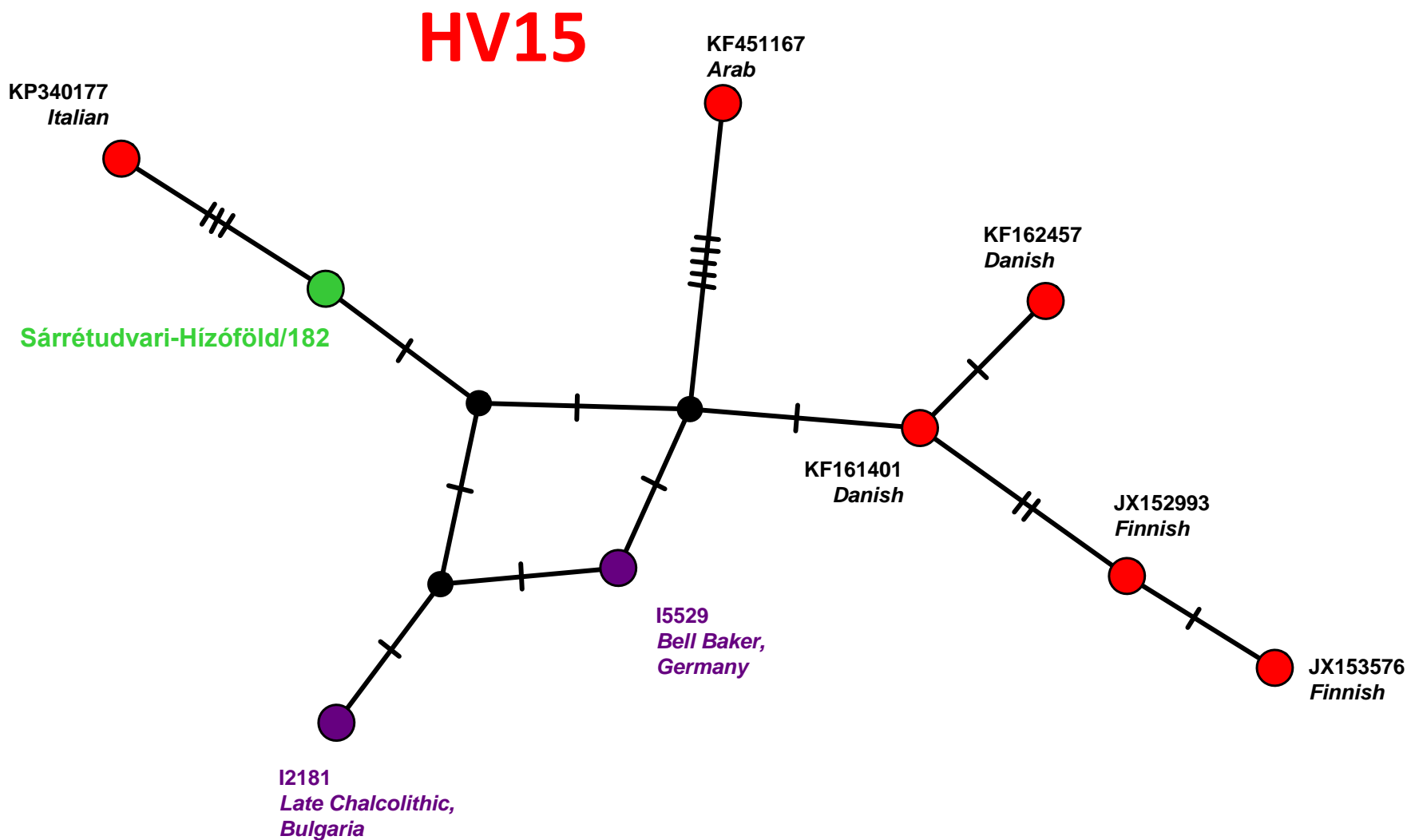




Western Eurasia



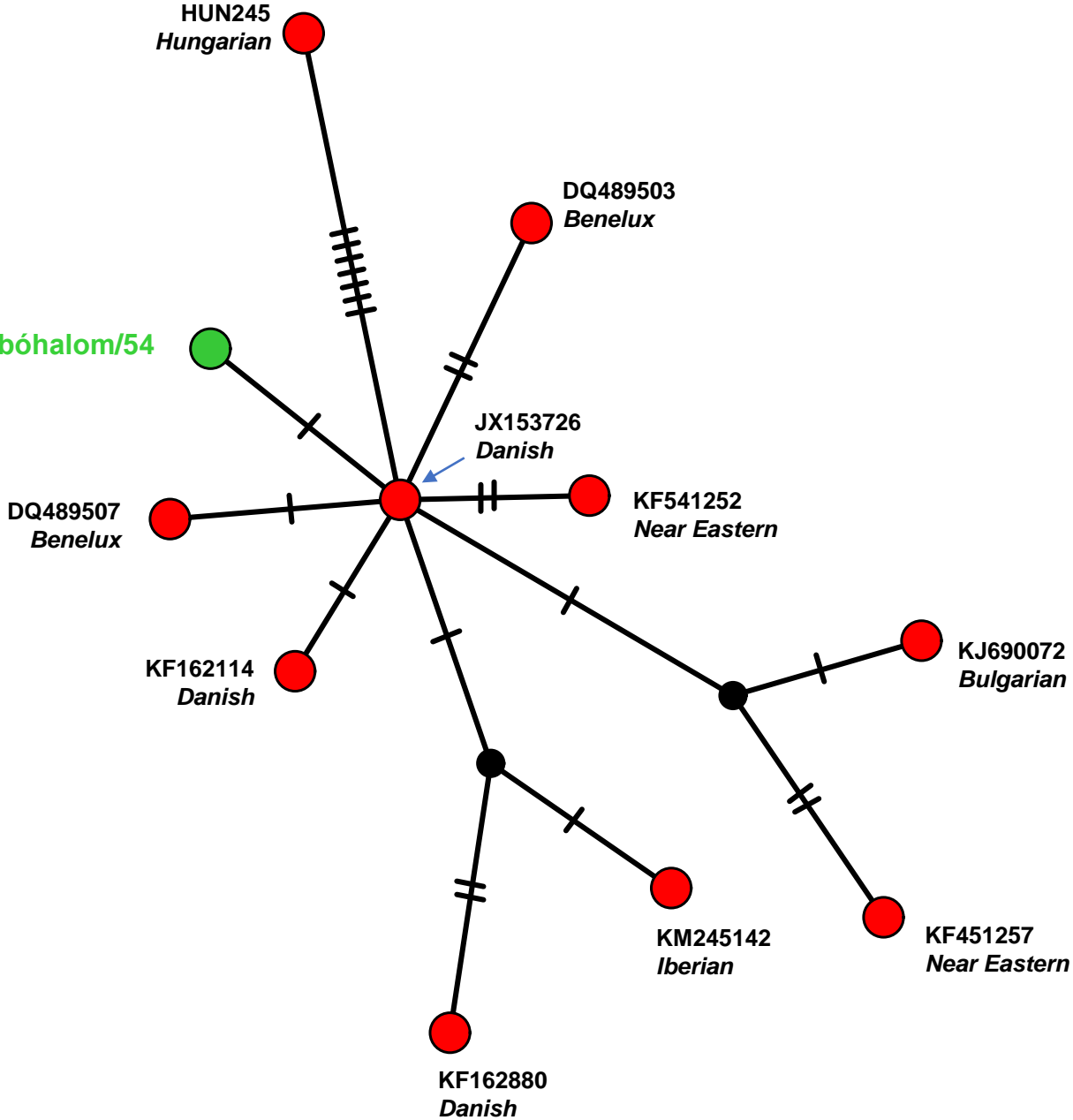
Western Eurasia



Eurasia

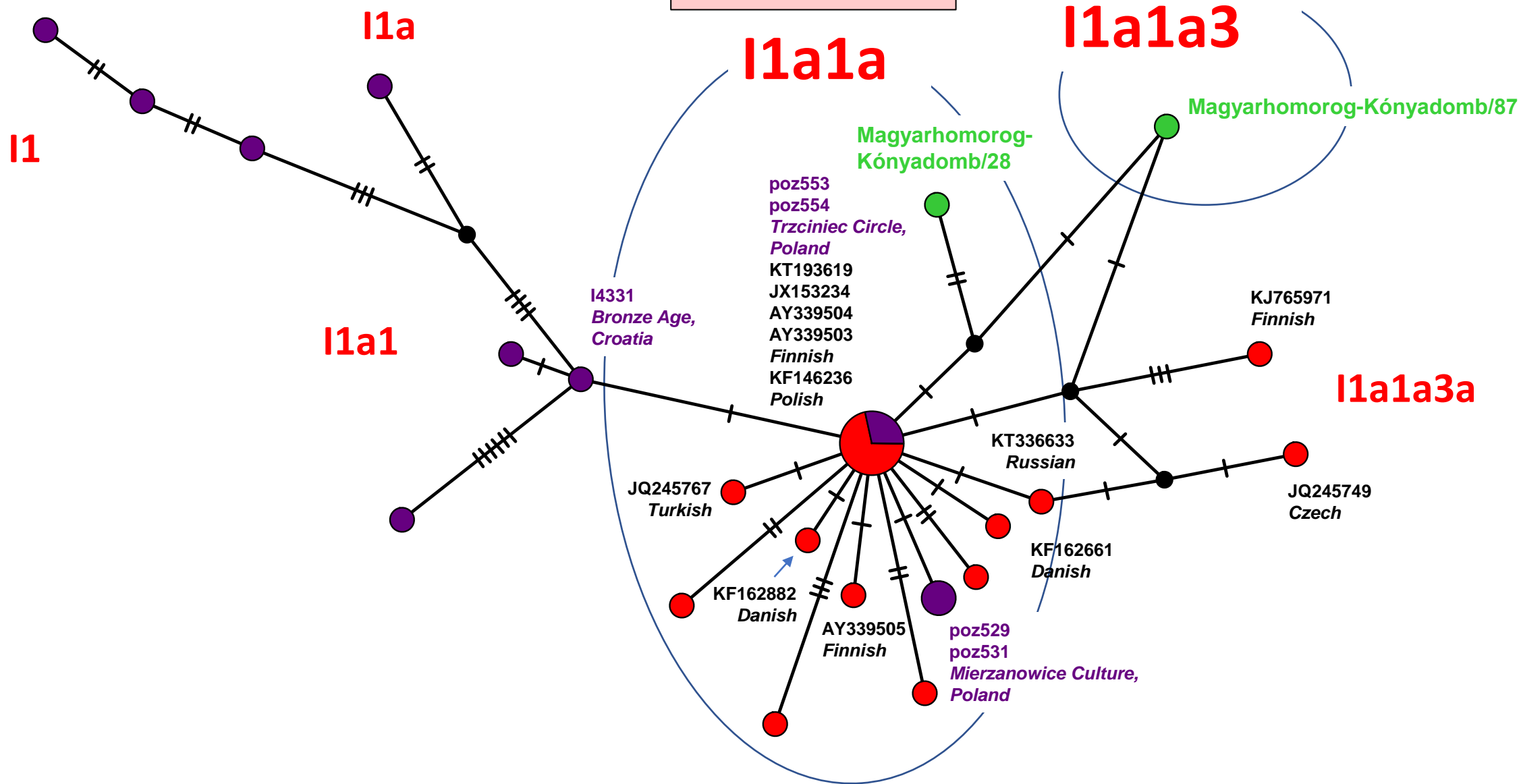
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Ibrány-Esbóhalom/54

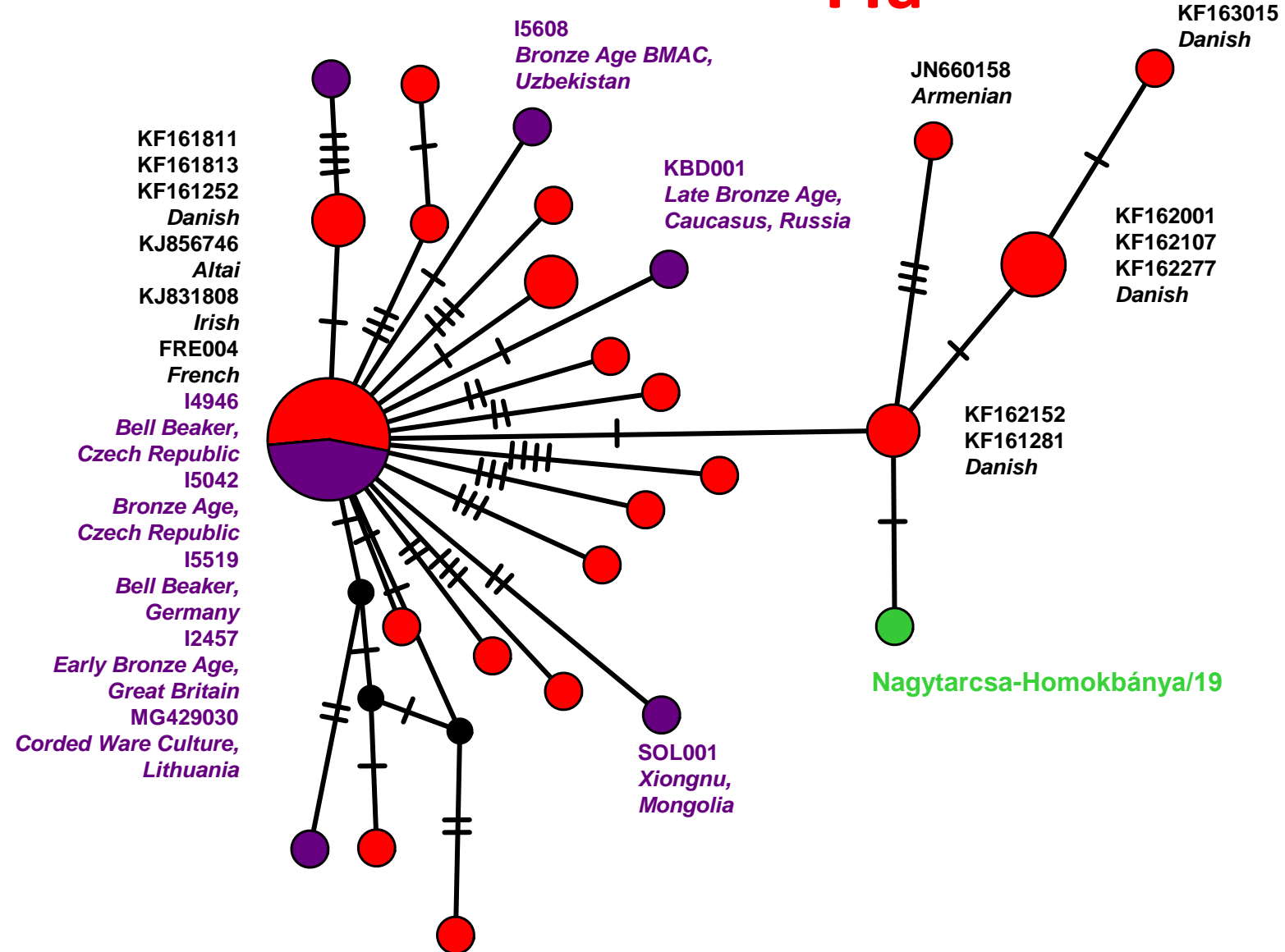


Western Eurasia

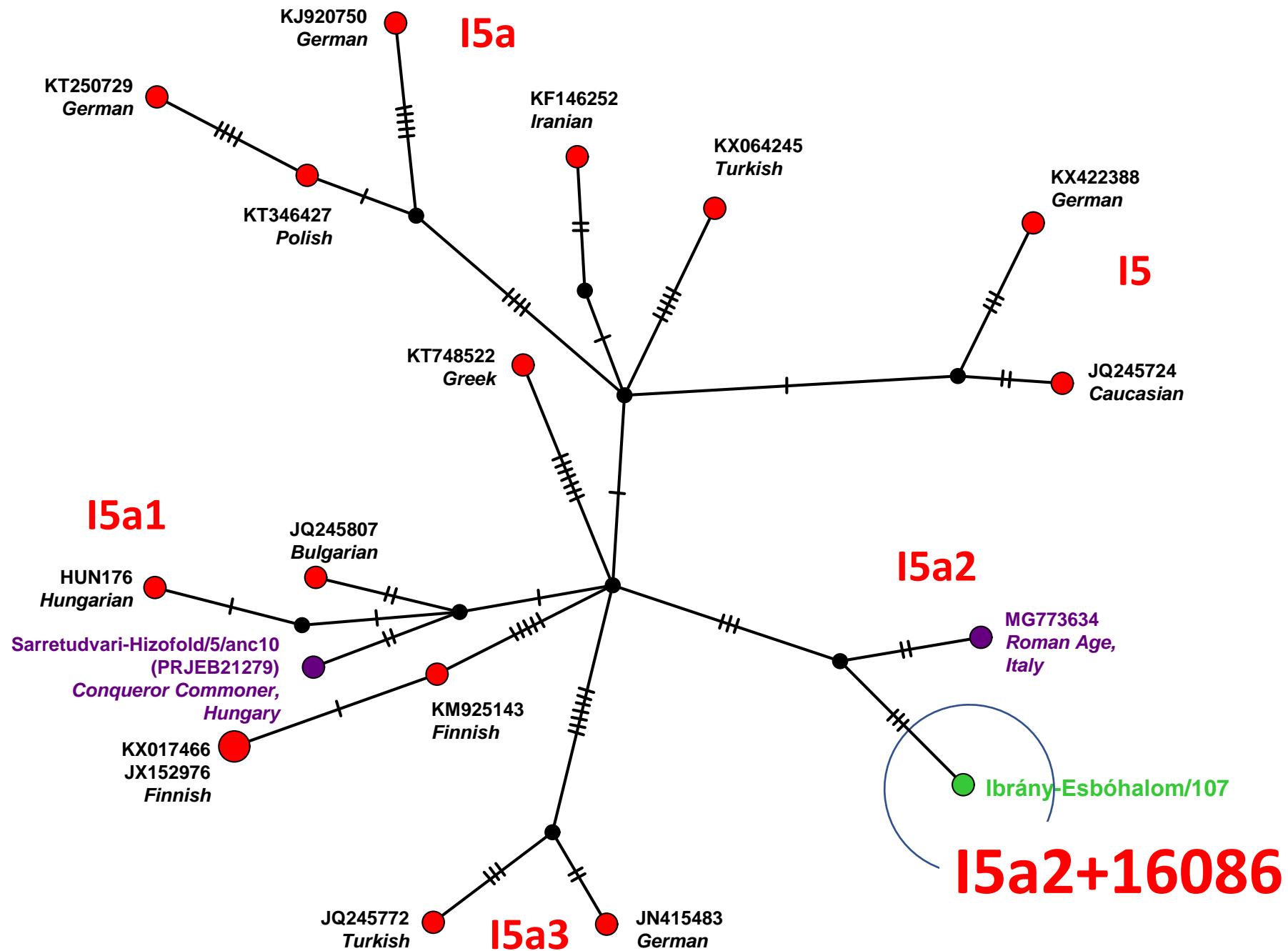
Western Eurasia



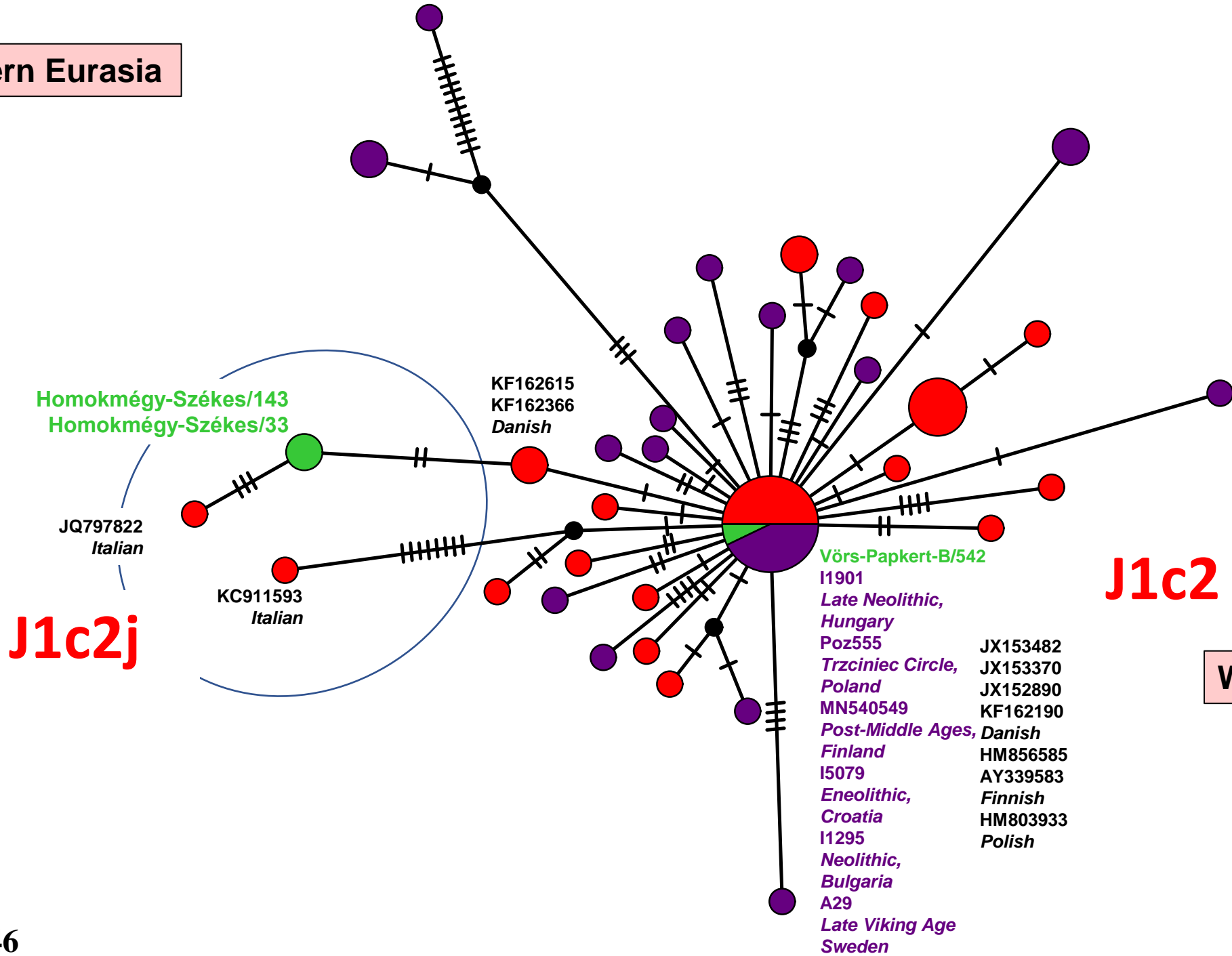
I4a



Western Eurasia



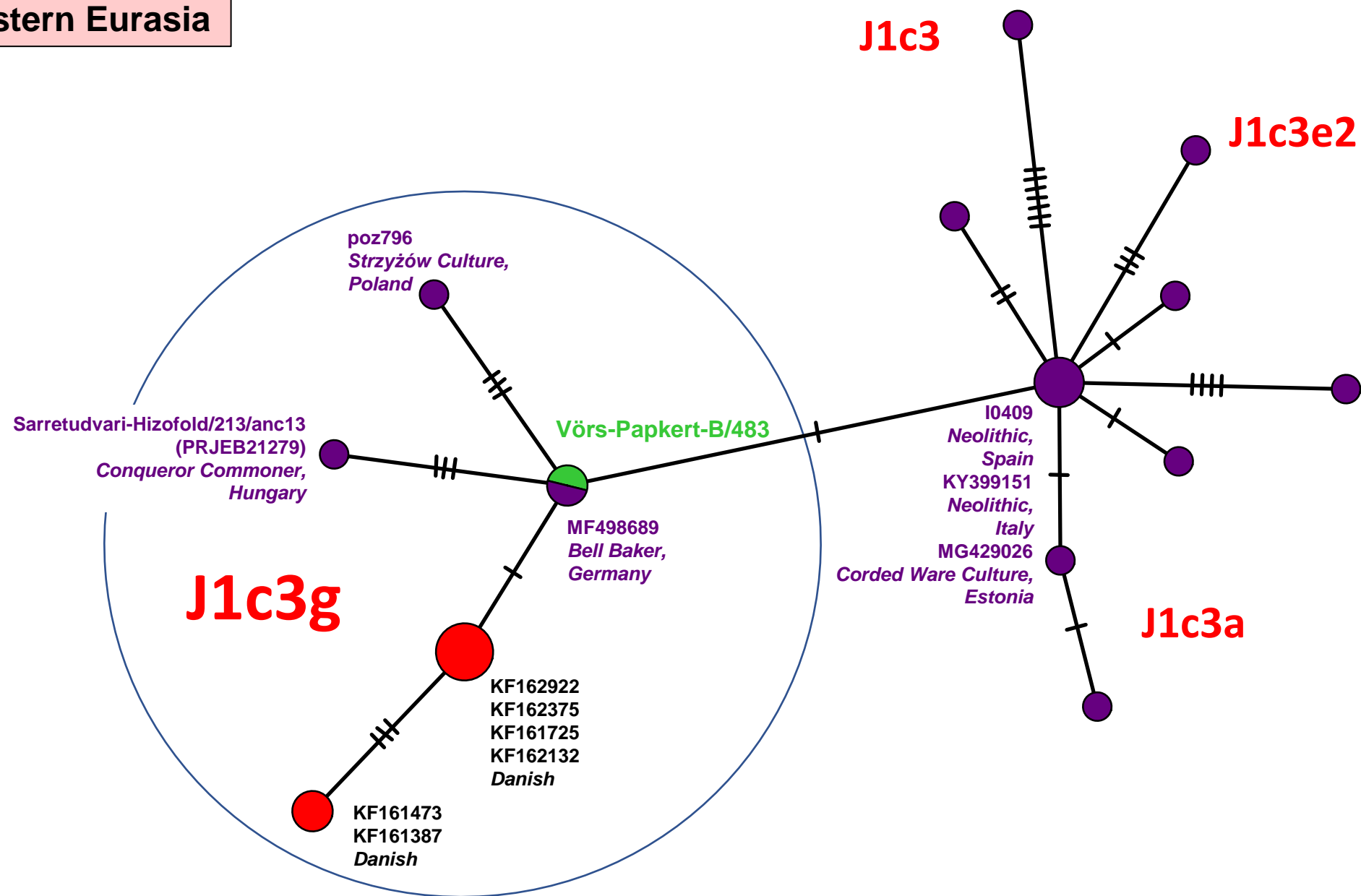
Western Eurasia



J1c2

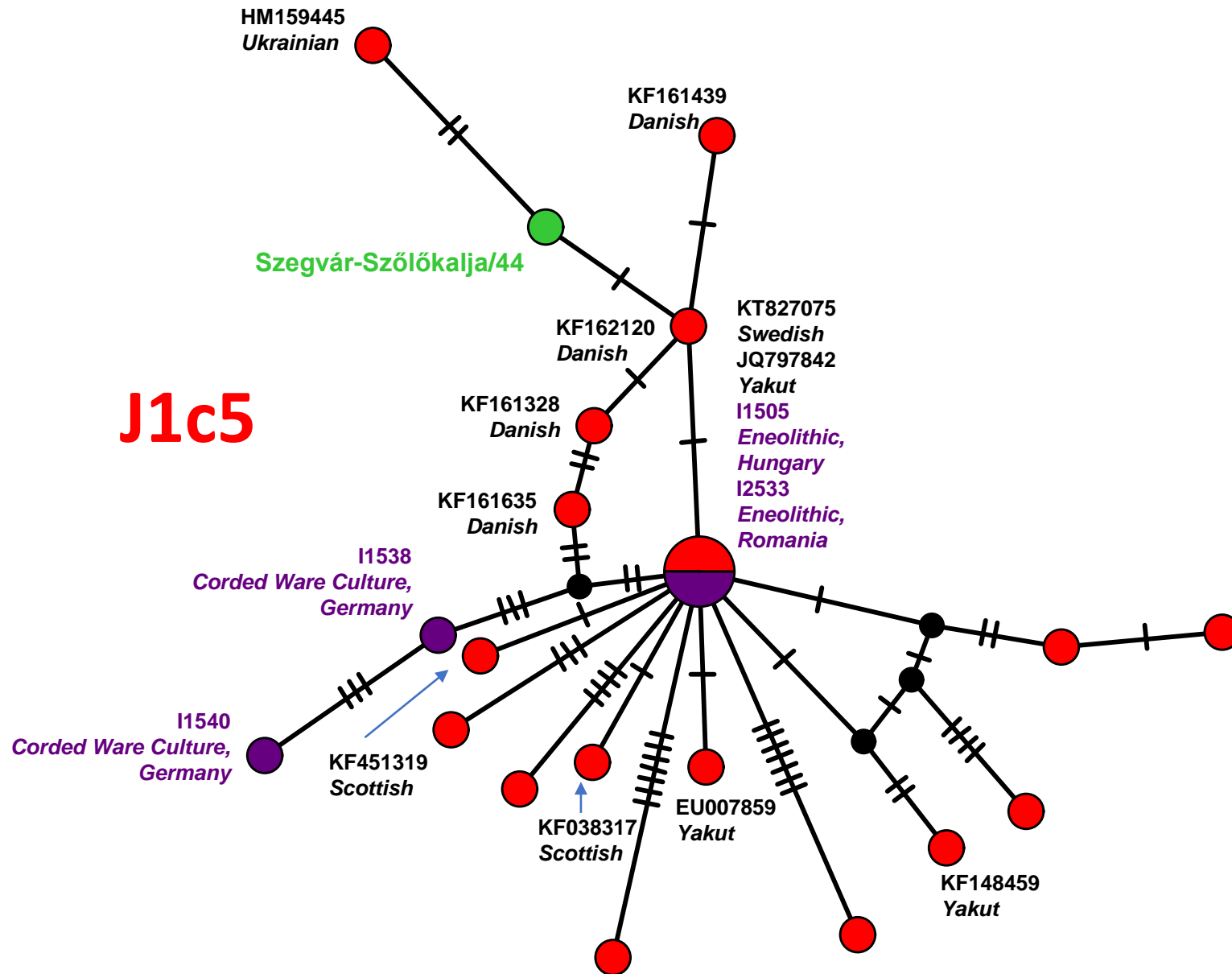
Western Eurasia

Western Eurasia

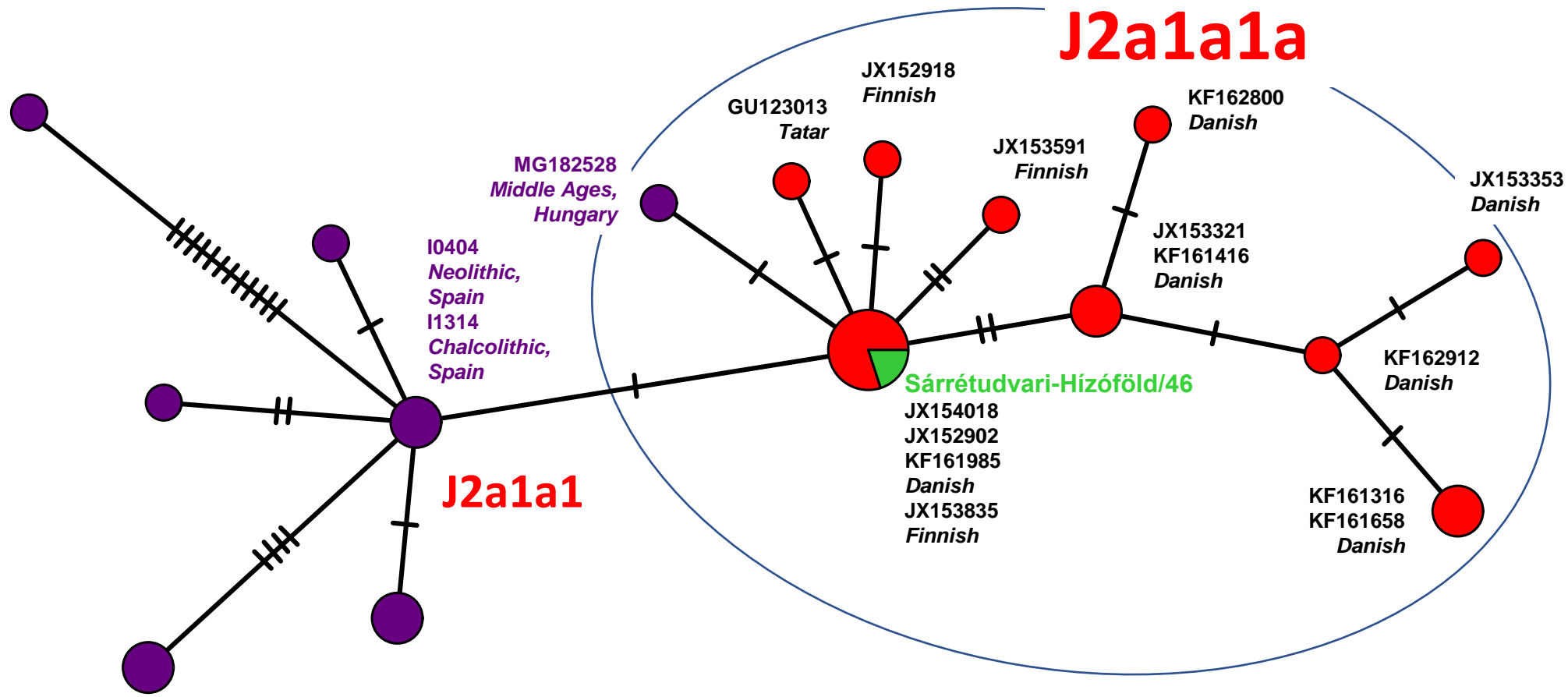


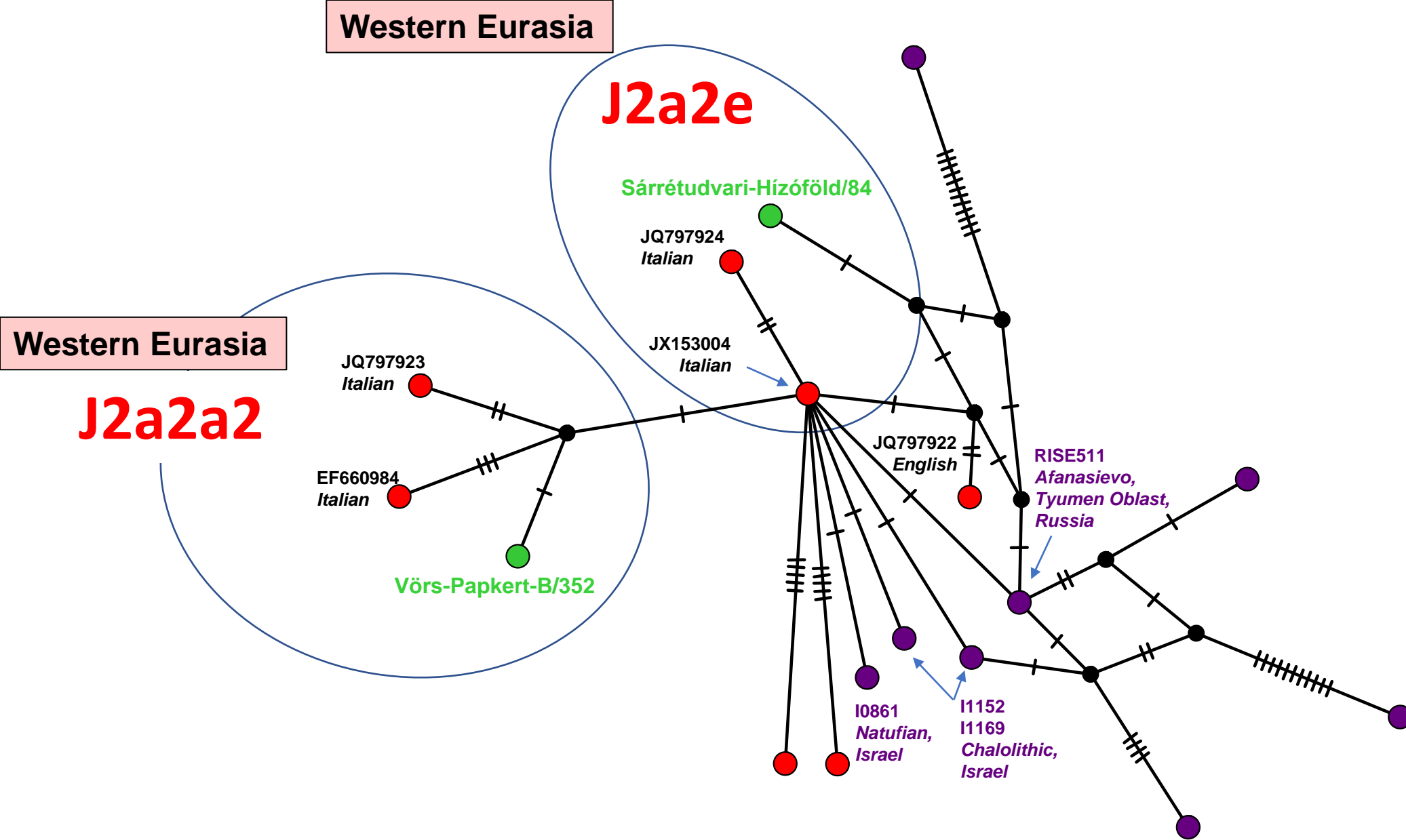


# Eurasia



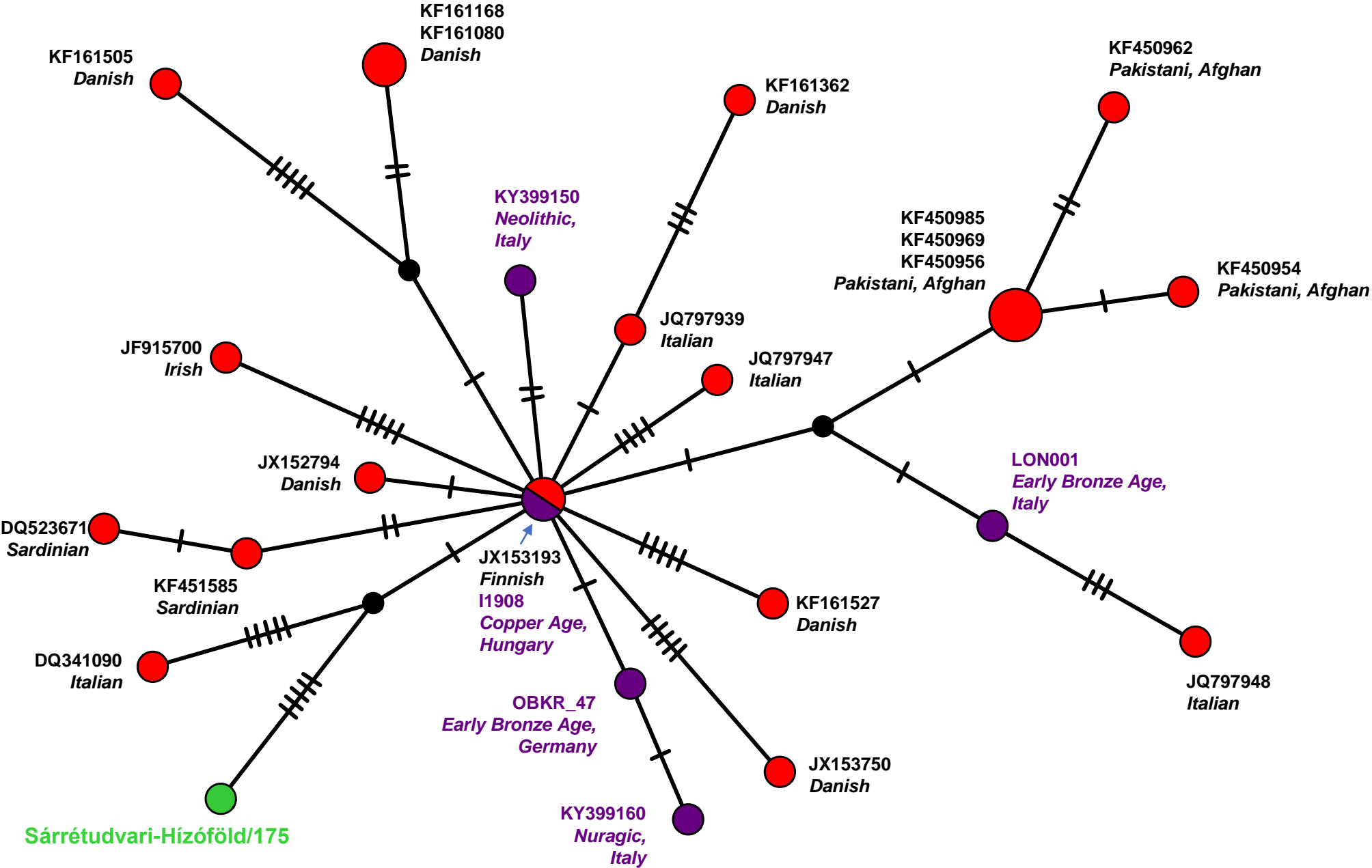
Western Eurasia



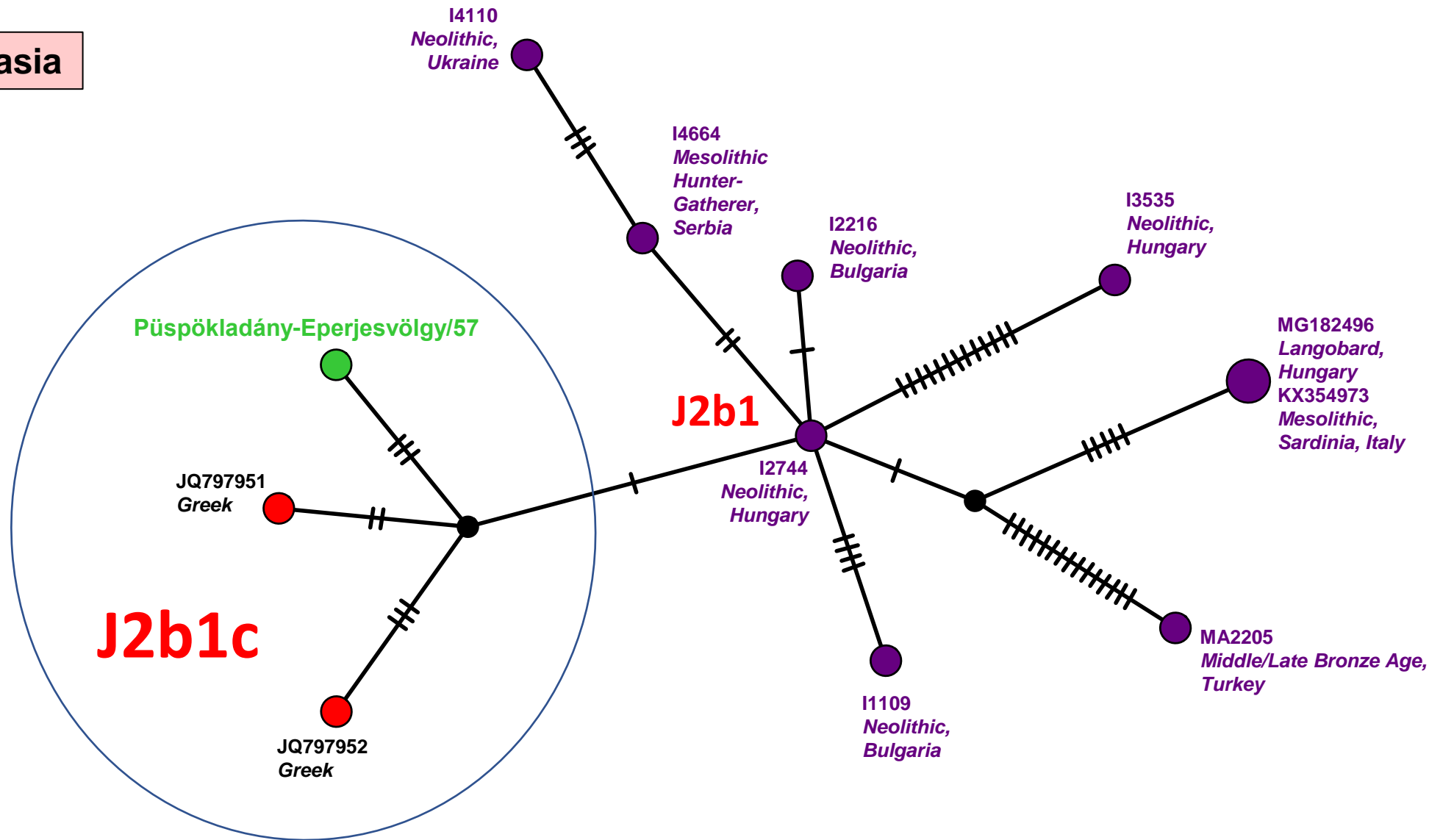


Eurasia

J2b1a

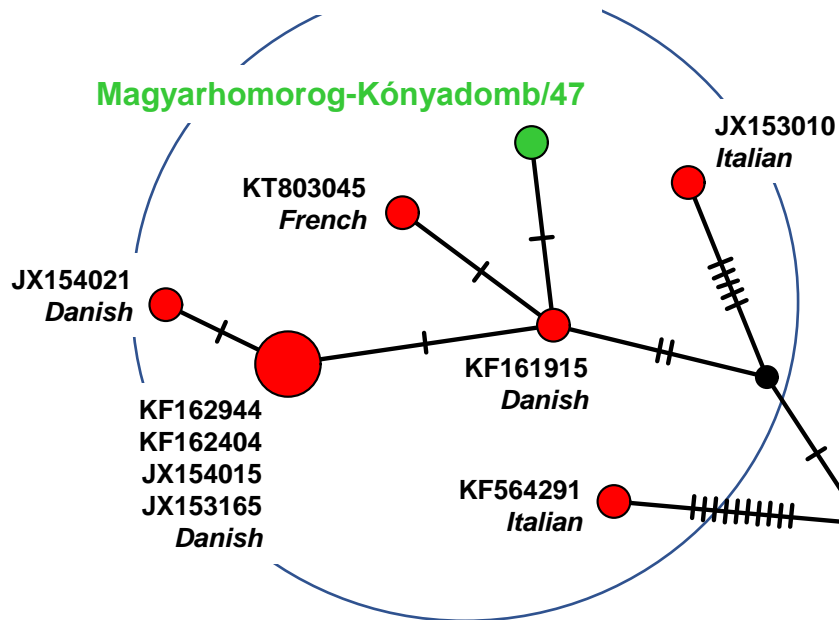


Western Eurasia



# K1a+150

## Western Eurasia



# K1a1a

## Western Eurasia

I5070  
Linear Pottery,  
Austria  
KM047211  
Polish  
KF162741  
KF162002  
Danish  
JN814516  
Scottish

Homokmégy-Székes/53

I1504  
Bronze Age,  
Hungary

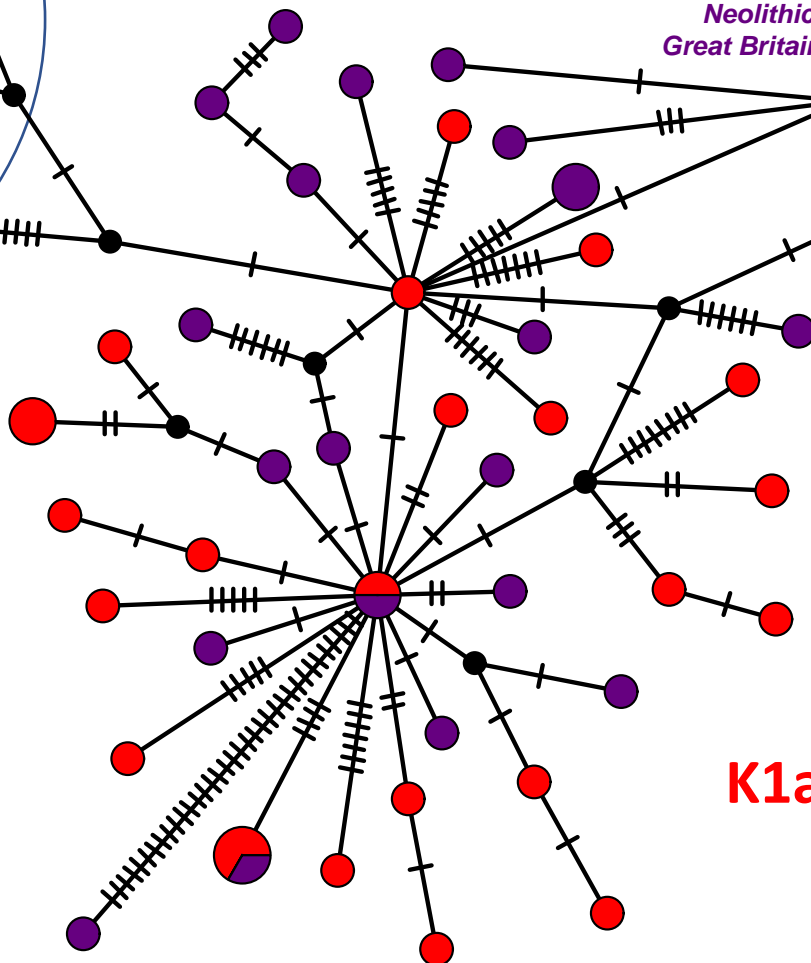
I5358  
Neolithic,  
Great Britain

I14188  
Neolithic,  
Hungary

# K1a1

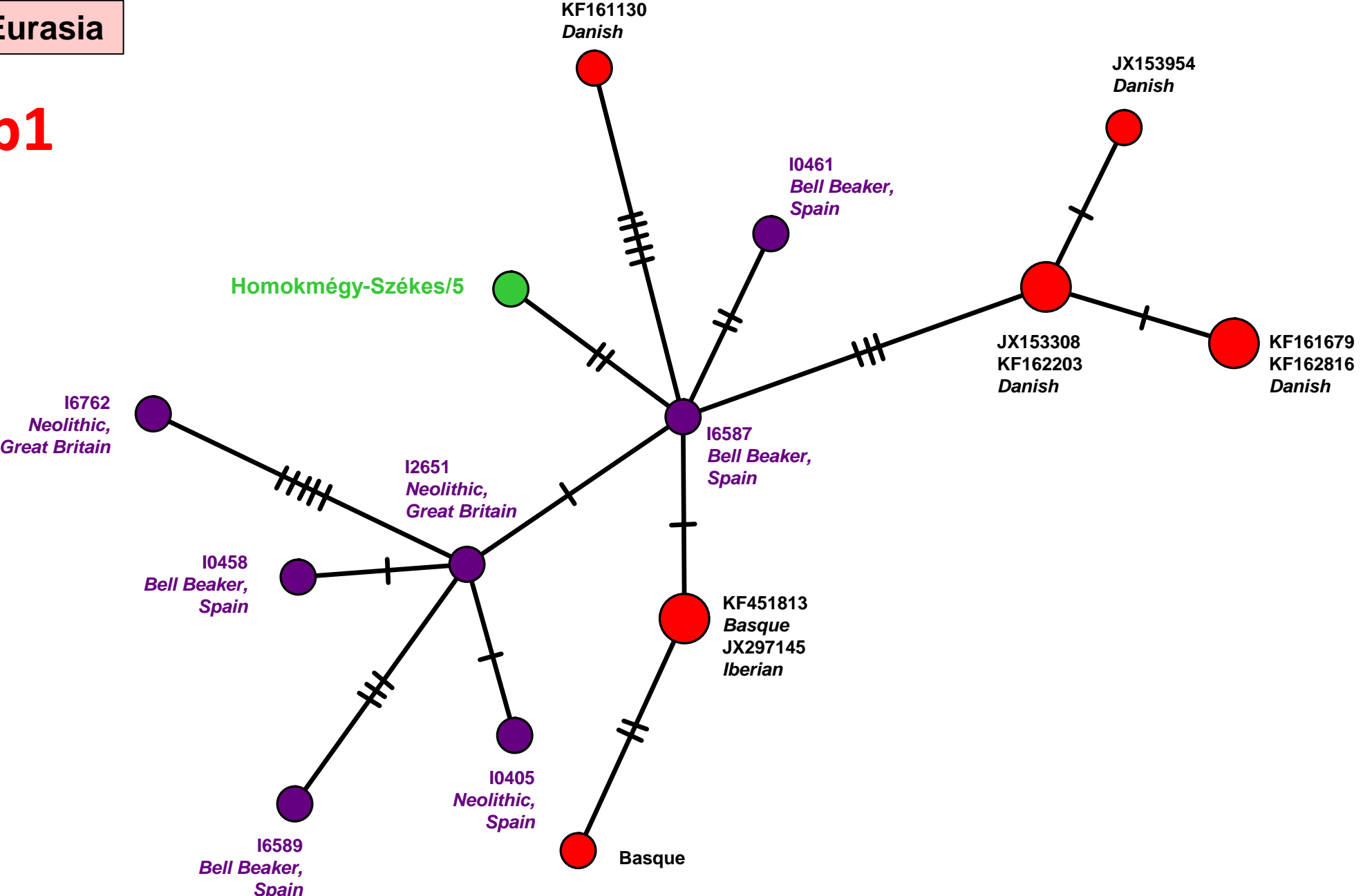
I2380  
Neolithic,  
Hungary

# K1a

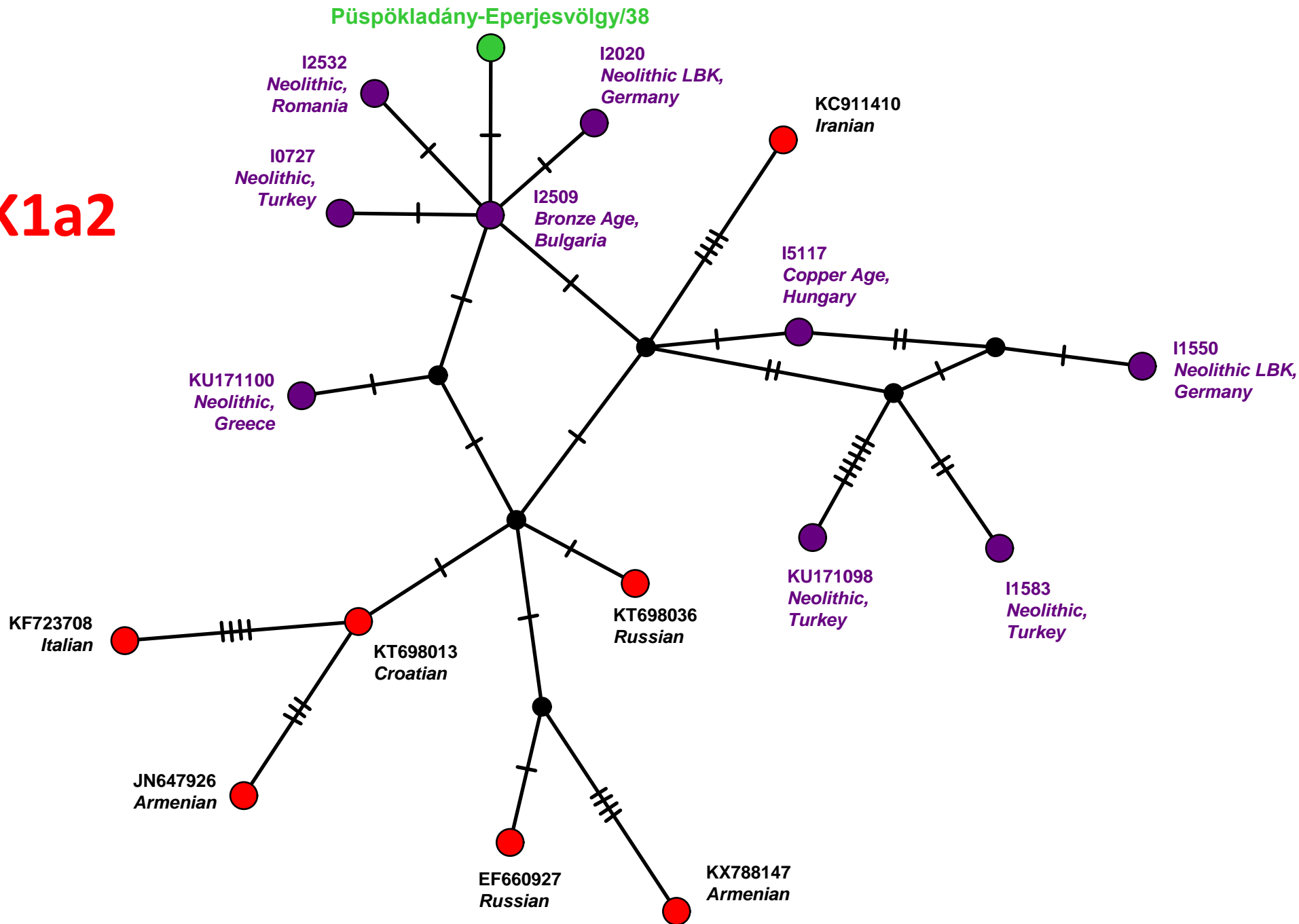


Western Eurasia

K1a1b1



K1a2

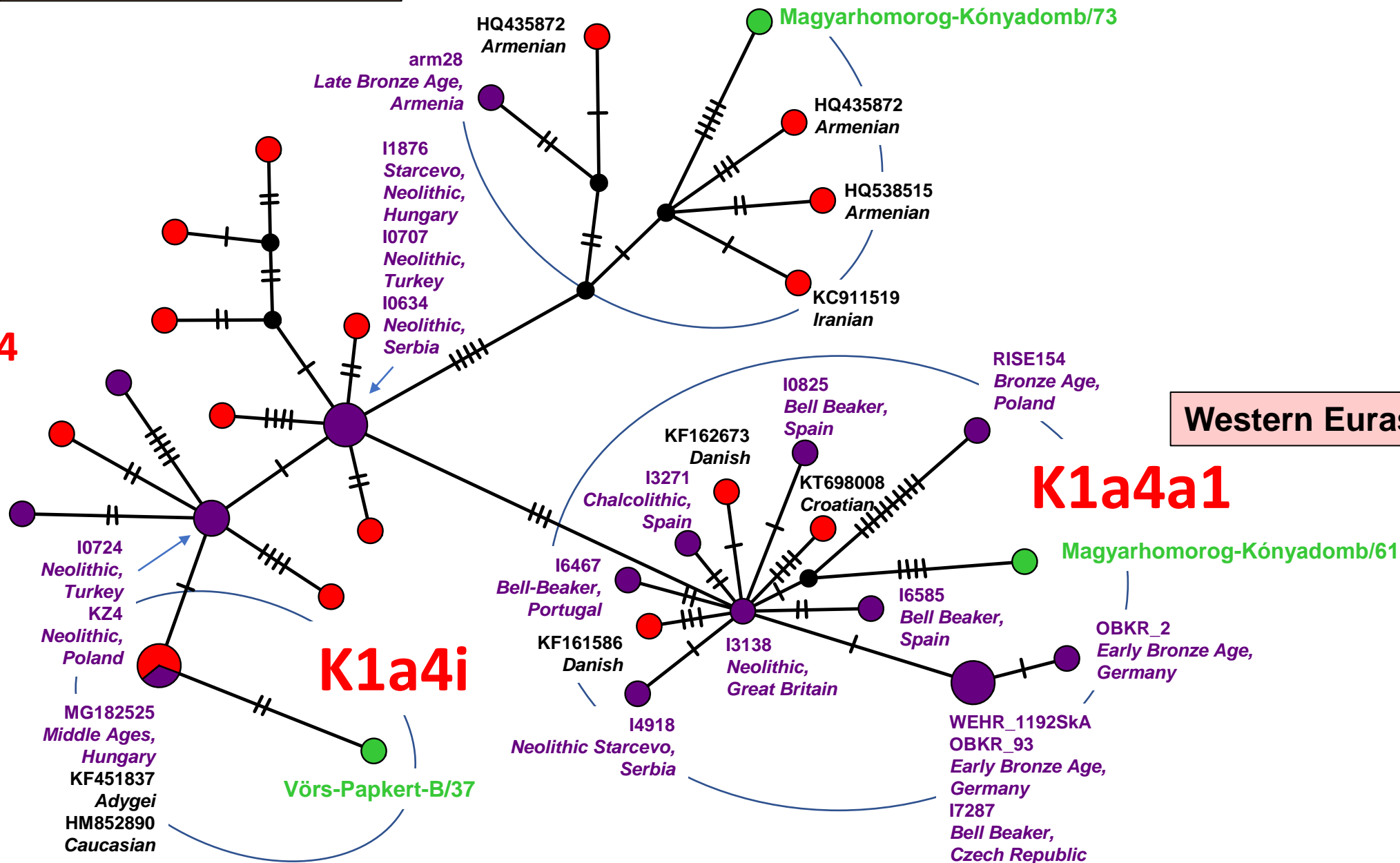




Caucasus/Middle East

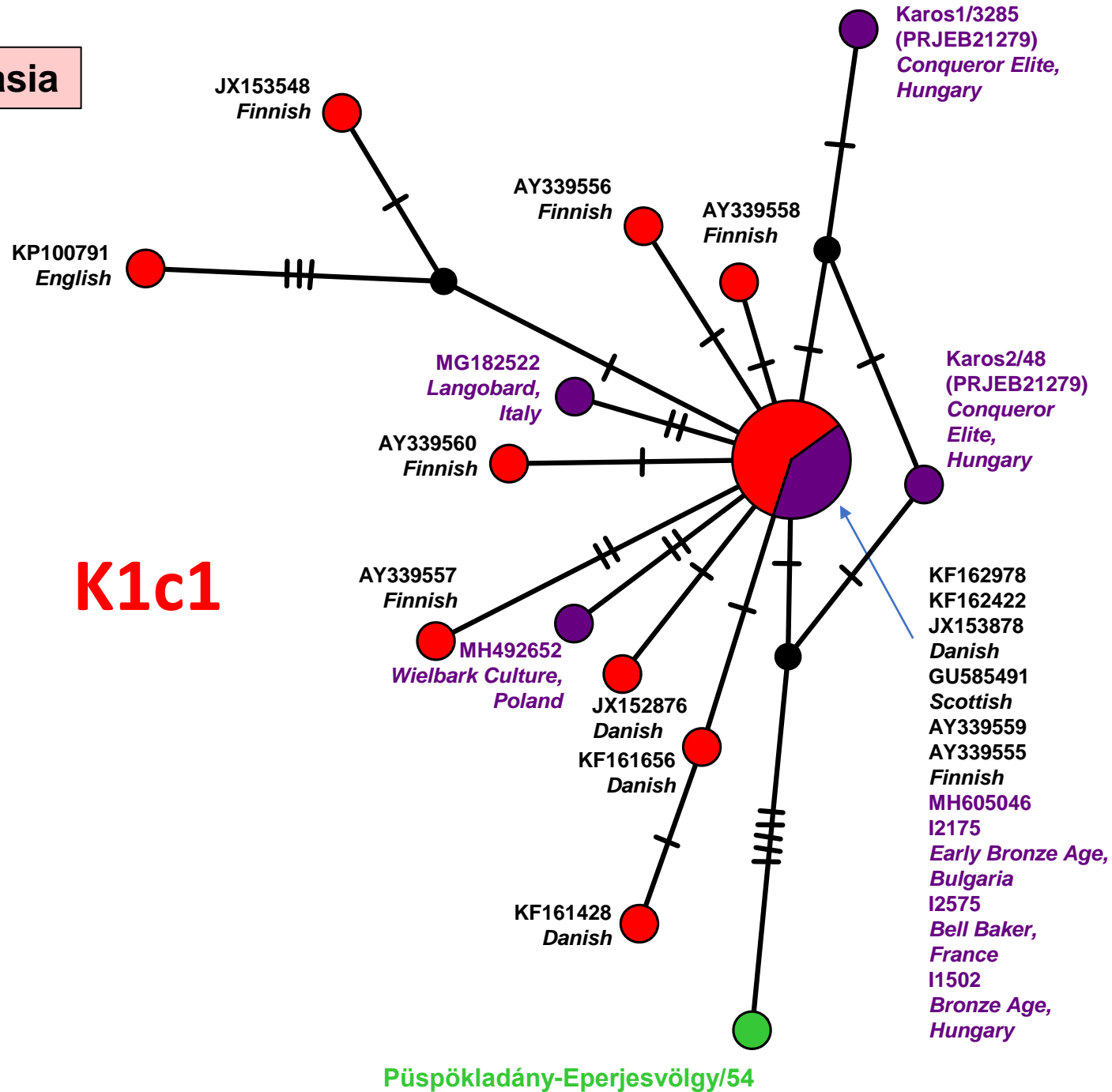
K1a4c1

K1a4

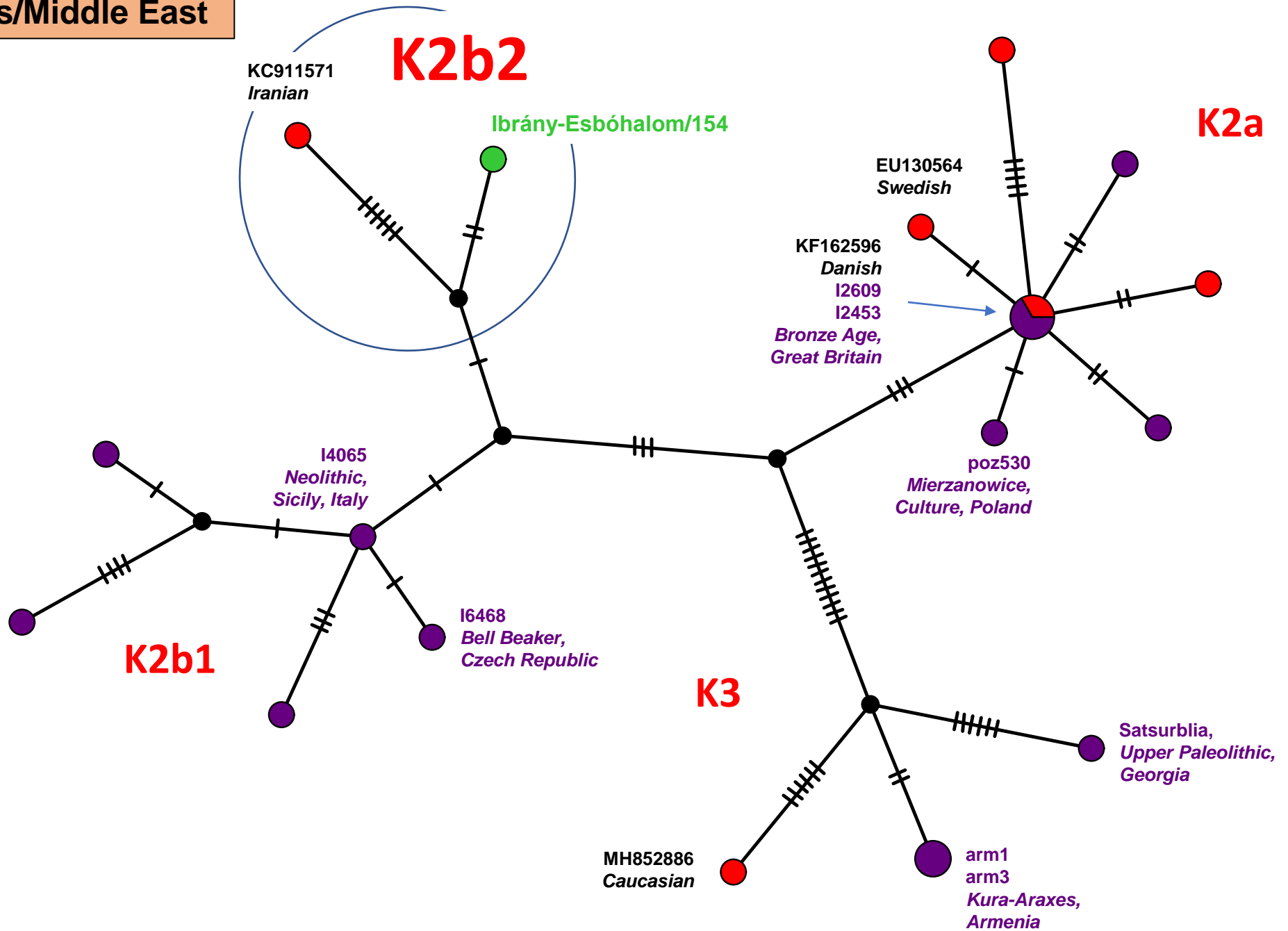


Caucasus/Middle East

Western Eurasia

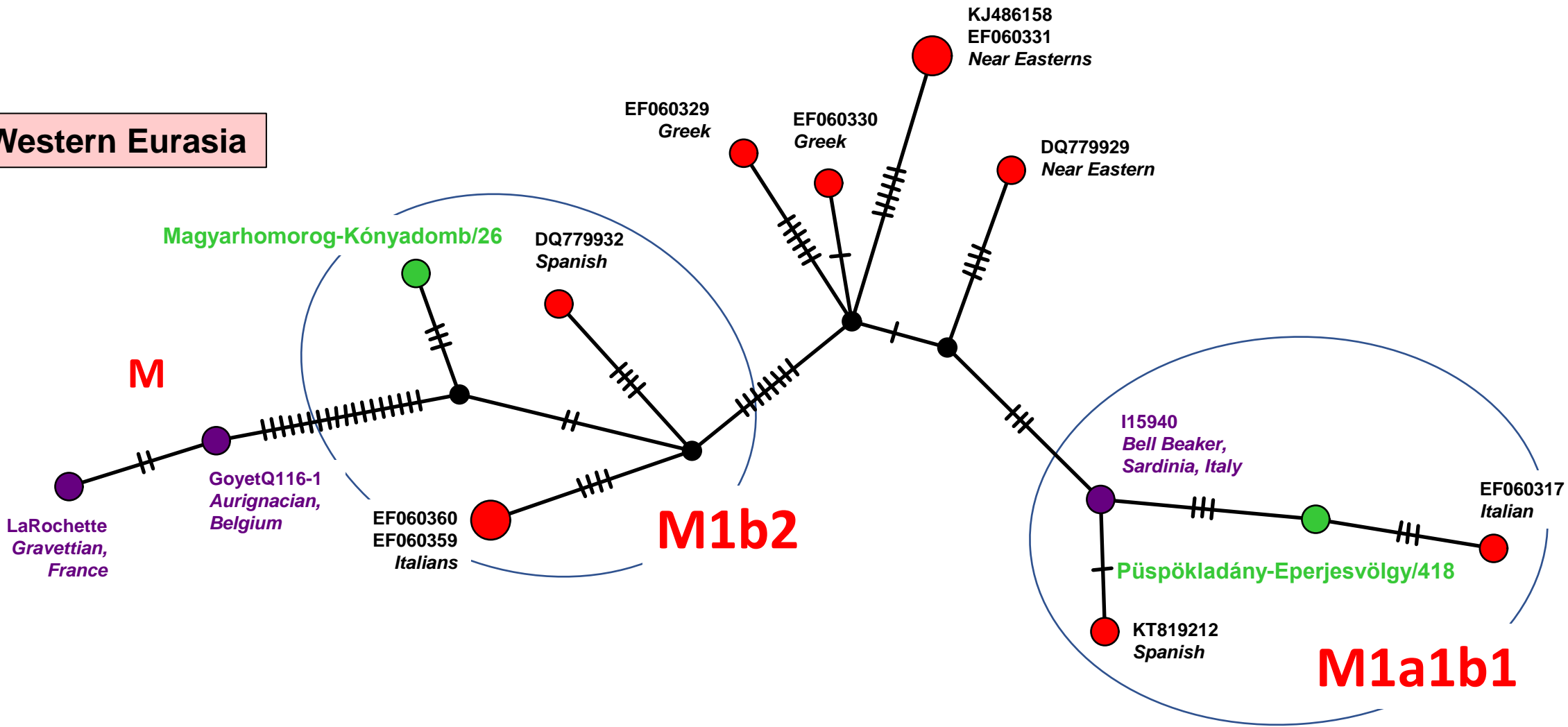


# Caucasus/Middle East



Western Eurasia

M1a1



M1a1b1

Western Eurasia

# N1a1a1a1

Eurasia

Szabadkigyos-Palliget/7/anc4  
(PRJEB21279)  
Conqueror Elite,  
Hungary

EF660944  
Italian

GU123026  
Tatar

EF486518  
Russian

JX154061  
Finnish

Magyarhomorog-Könyadomb/1  
Karas2/31  
(PRJEB21279)  
Conqueror Elite,  
Hungary

EF486519  
Czech

BAU001  
Xiongnu,  
Mongolia  
I11541  
Late Bronze Age,  
Kazakhstan  
I4265  
Middle/Late Bronze Age,  
Kazakhstan  
GU290215  
Russian

RISE391  
Sintashta,  
Kazakhstan

LHSZ27B  
Langobard,  
Hungary

I4255  
Bronze Age,  
Uzbekistan

# N1a1a1a1a

Eastern Eurasia

Magyarhomorog-Könyadomb/5  
Kenezlo-Fazekaszug2/1041  
Karas2/9  
(PRJEB21279)  
Conqueror Elite,  
Hungary

GU290214  
Central-Inner Asian

GU290209  
Hungarian

Karas2/60  
(PRJEB21279)  
Conqueror Elite,  
Hungary

Homokmégy-Székes/36

Oroshaza-Gorbicstanya/2/anc3  
(PRJEB21279)  
Conqueror Elite,  
Hungary

Homokmégy-Székes/35  
Magyarhomorog-Könyadomb/4  
Kenezlo-Fazekaszug2/10939  
Kenezlo-Fazekaszug2/1045  
Kenezlo-Fazekaszug2/1027  
(PRJEB21279)  
Conqueror Elite,  
Hungary

EF153778  
Buryat  
DAS001  
Late Middle Ages,  
Mongolia

Püspökladány-Eperjesvölgy/115  
Magyarhomorog-Könyadomb/3  
Uyelgi19  
Kushnarenkovo-Karayakupovo,  
Trans-Ural, Russia

Uyelgi12  
Kushnarenkovo-Karayakupovo,  
Trans-Ural, Russia

Magyarhomorog-Könyadomb/23

Uyelgi2  
Kushnarenkovo-Karayakupovo,  
Trans-Ural, Russia

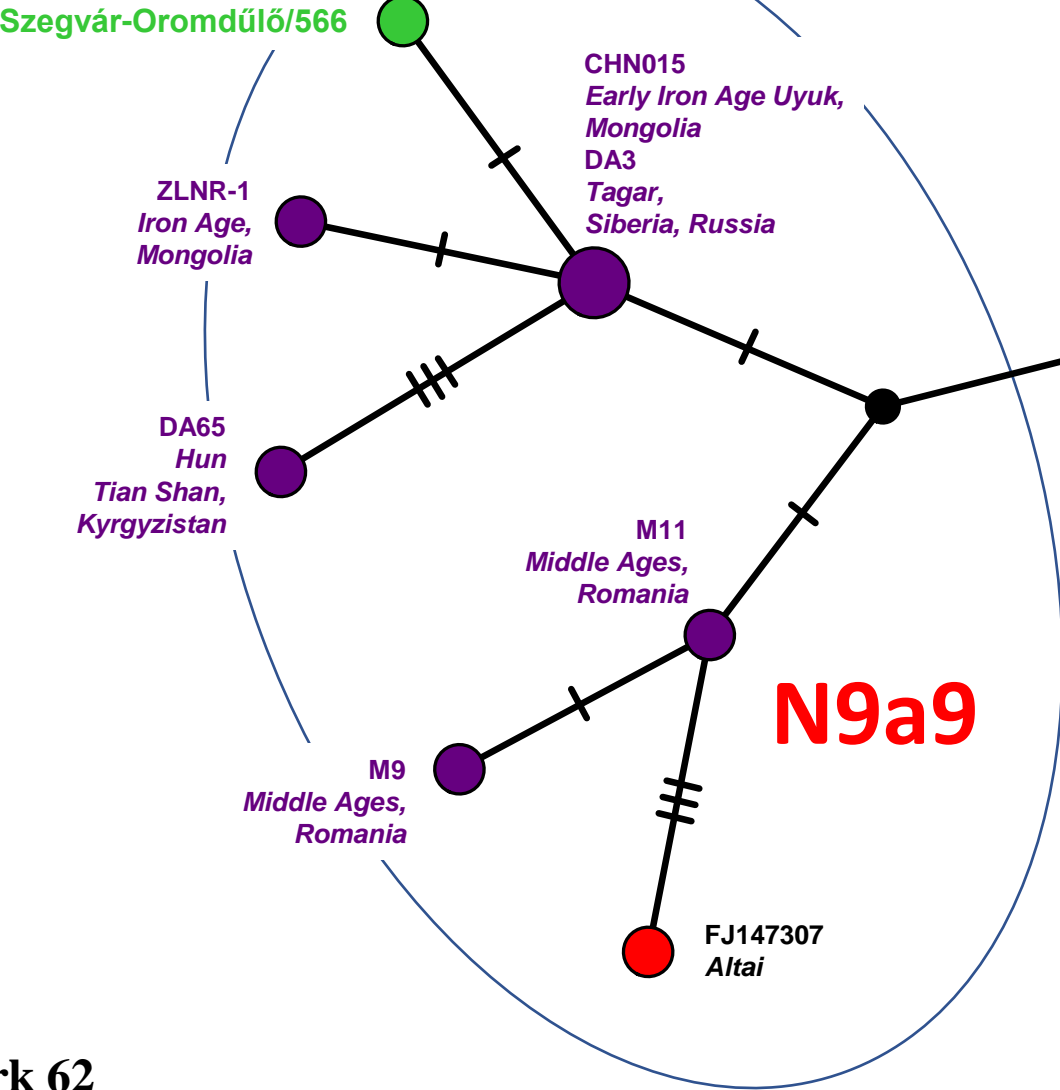
Uyelgi20  
Kushnarenkovo-Karayakupovo,  
Trans-Ural, Russia

# N1a1a1a

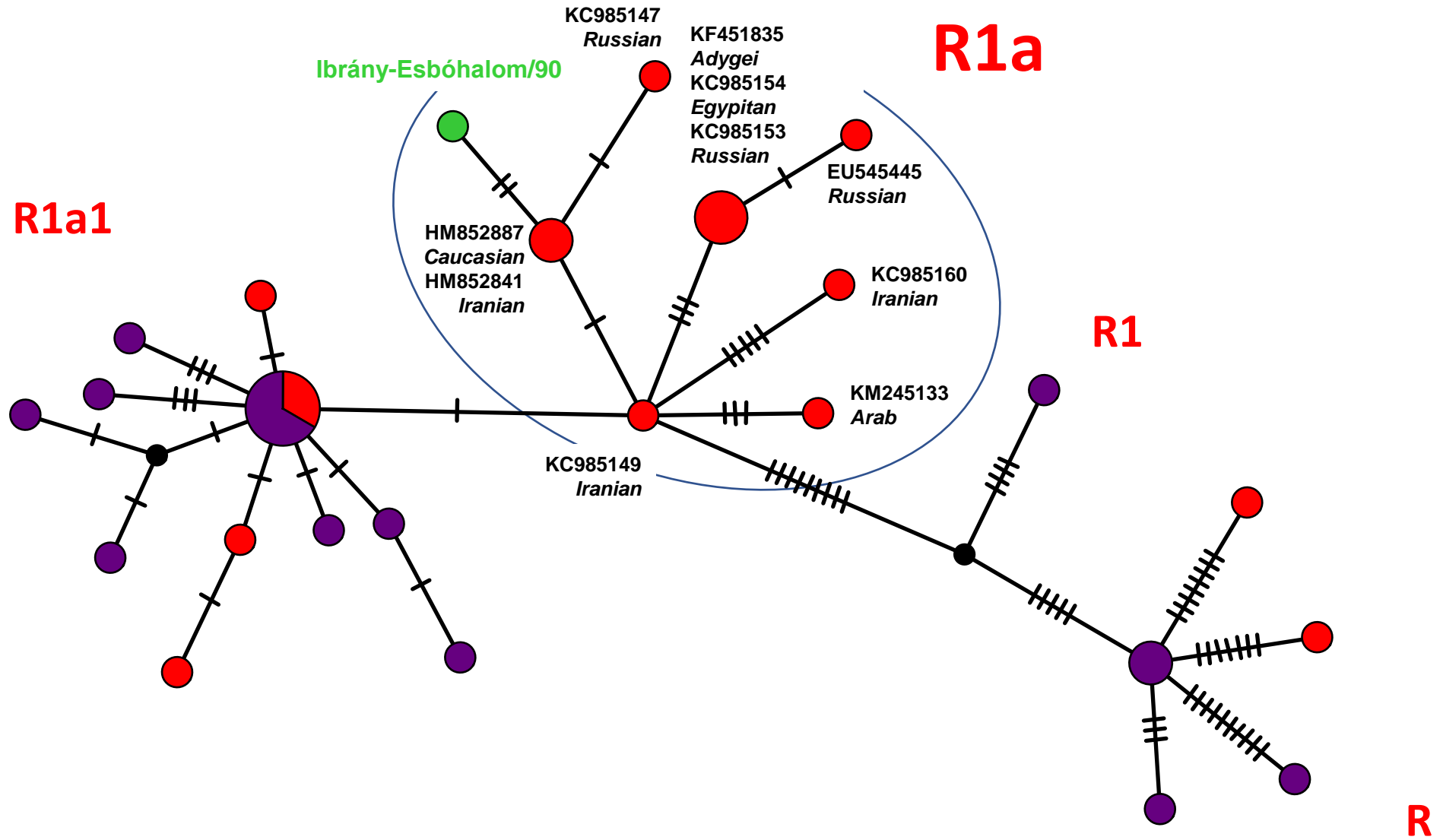
Network 60



Eastern Eurasia



# Caucasus/Middle East





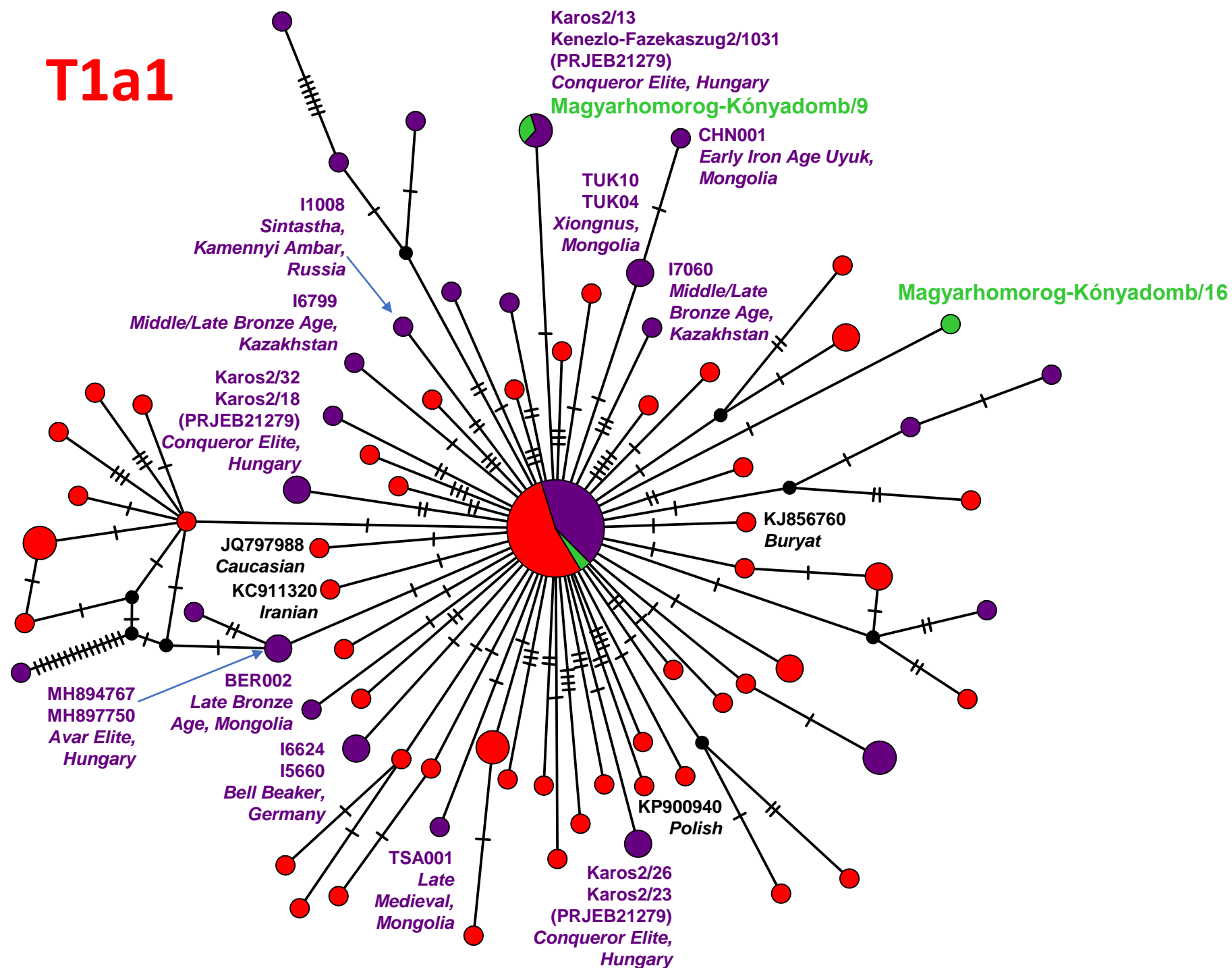
# Eurasia

## T1a1

Central Circle:

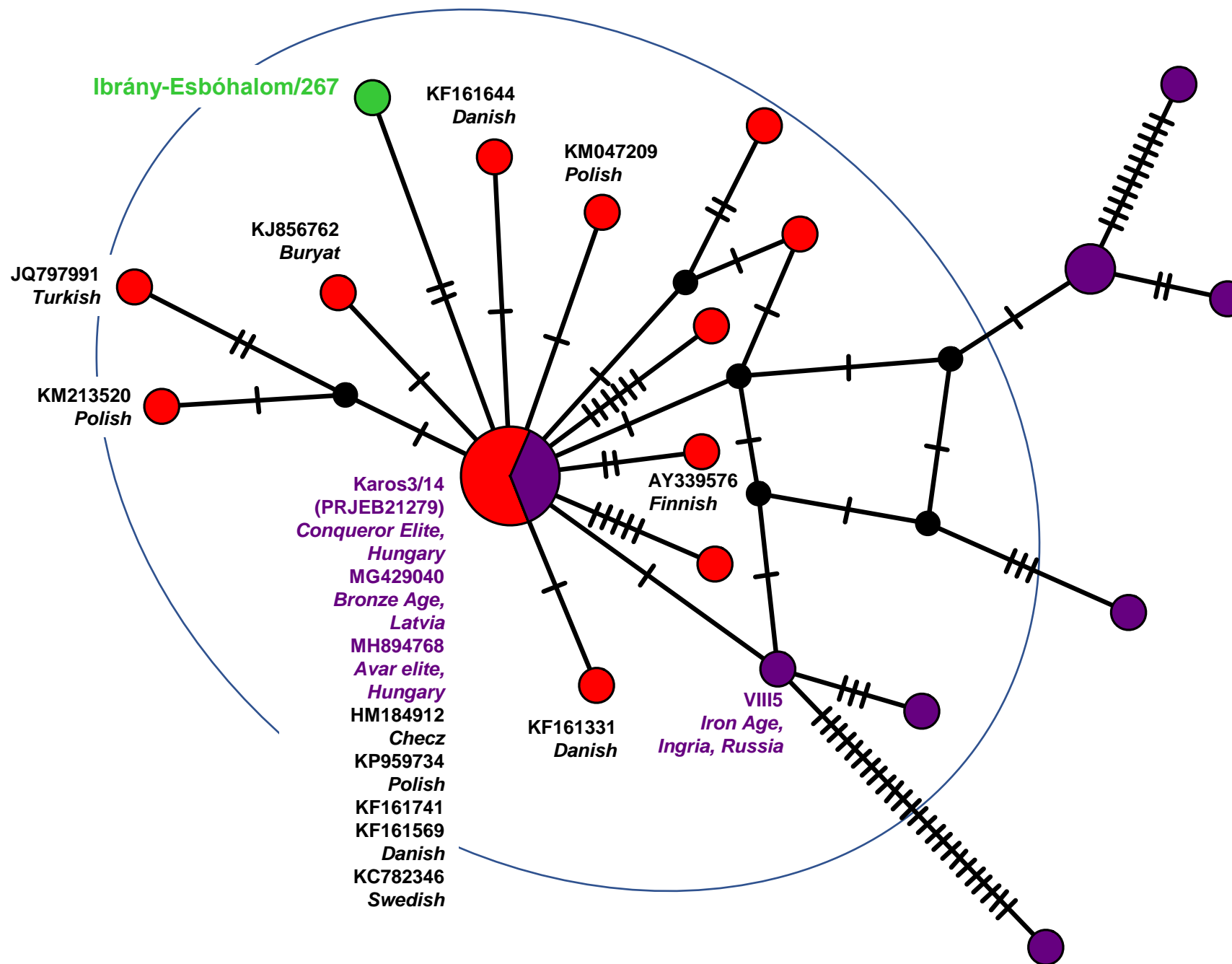
Magyarhomorog-Kőnyadomb/151

KF162202	Yamnaya,
KF162064	Ukraine
KF161998	I4892
JX153684	Bronze Age,
JX153402	Czech Republic
Danish	A25
JN880467	Late Viking Age,
Irish	Sweden
HQ167734	chy002
Ukrainian	Late Sarmatian,
GU122980	Orenburg Region,
Tatar	Russia
AF382006.	POST_50
Spanish	Early Bronze Age
KF057946	Germany
Norwegian	MG182461
JQ797981	Langobard,
Turkish	Hungary
JQ797980	I6797
Caucasian	Middle/Late Bronze
JQ797979	Age,
Swedish	Kazakhstan
JQ797978	I3769
Baltic	Late Bronze Age,
I0550	Kazakhstan
Bronze Age,	I12979
Germany	Iron Age,
I2105	Pakistan



Eurasia

T1a1b



Western Eurasia

Magyarhomorog-Könyadomb/88

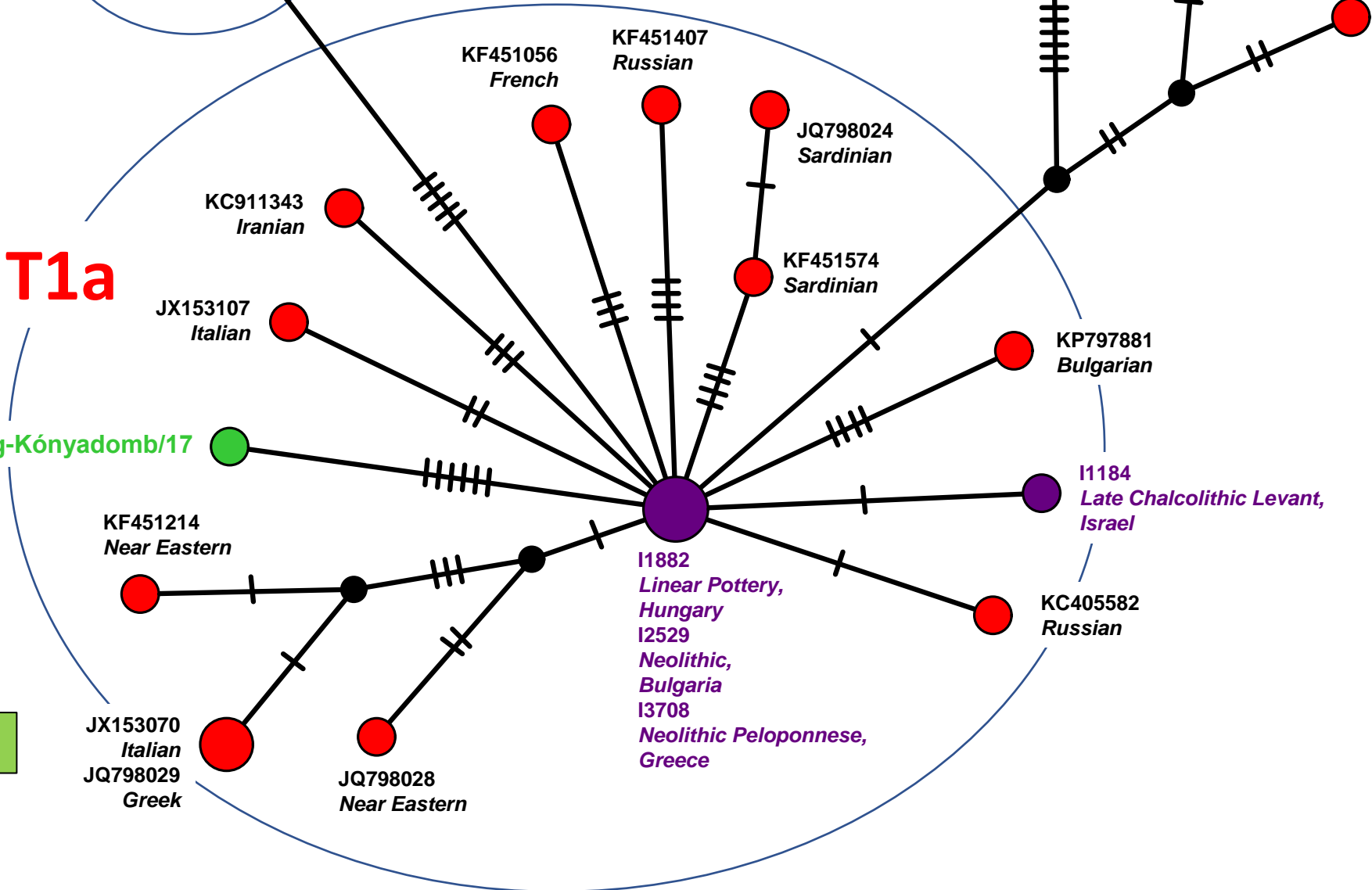
T1a4

T1

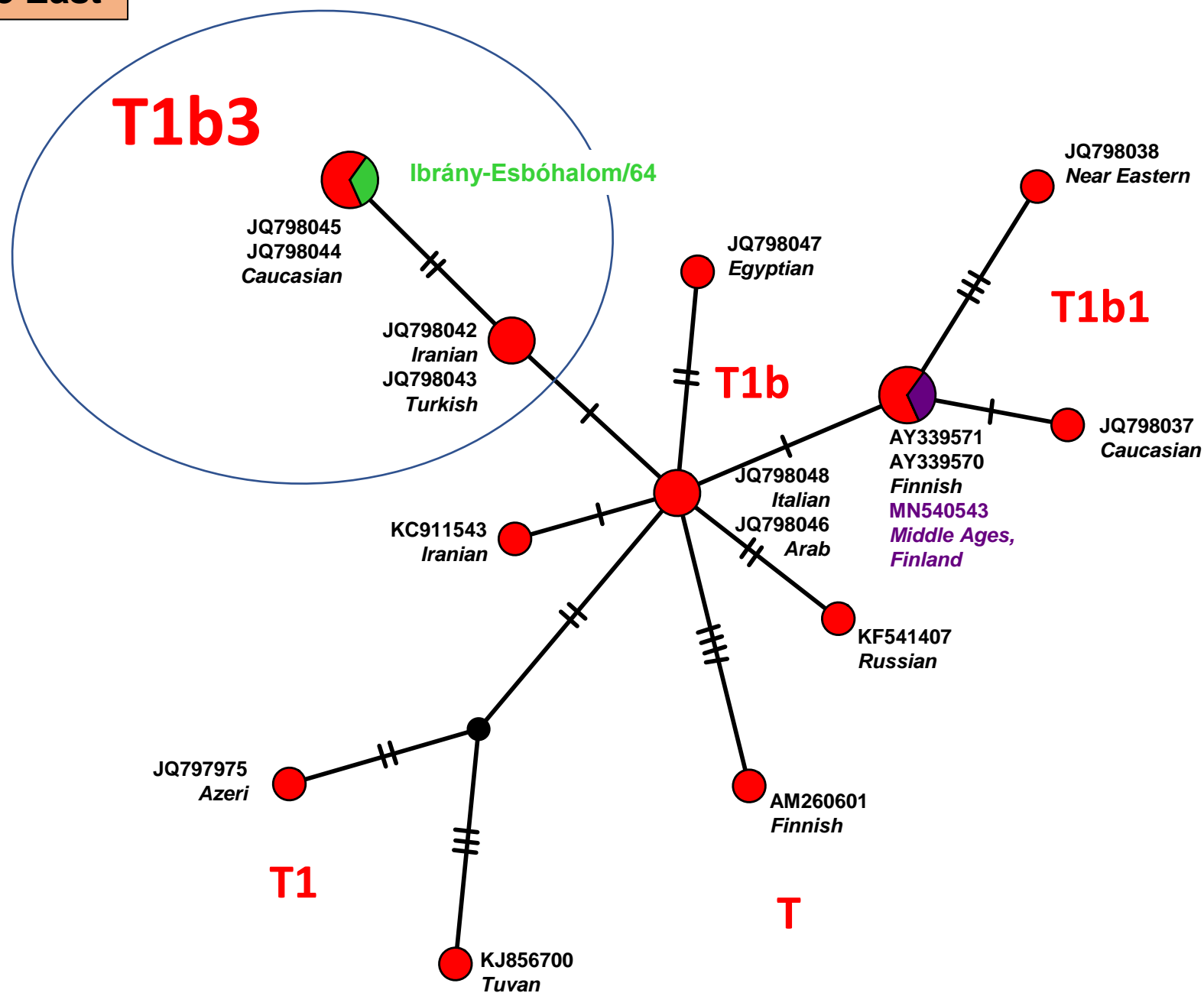
T1a

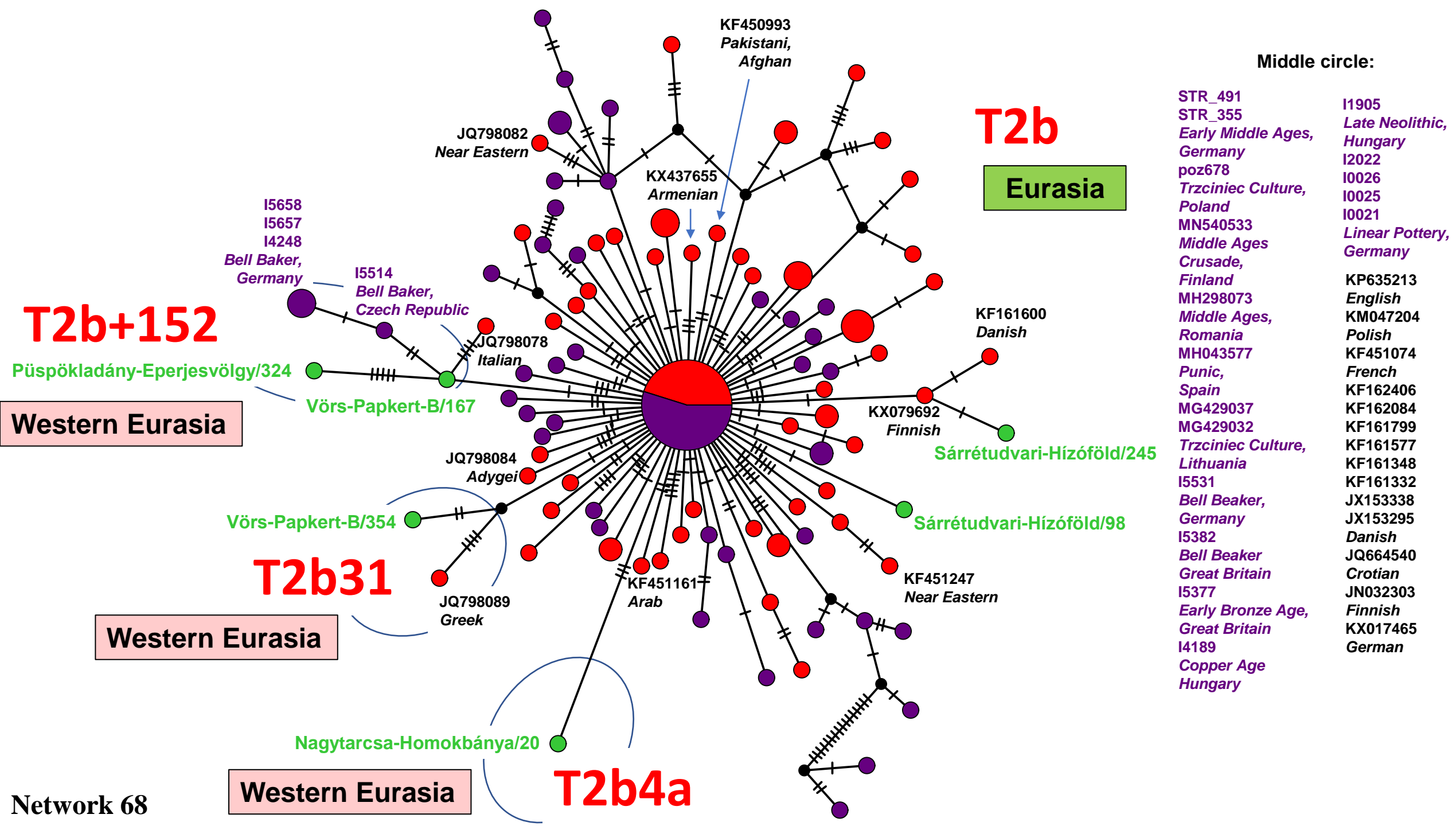
Magyarhomorog-Könyadomb/17

Eurasia

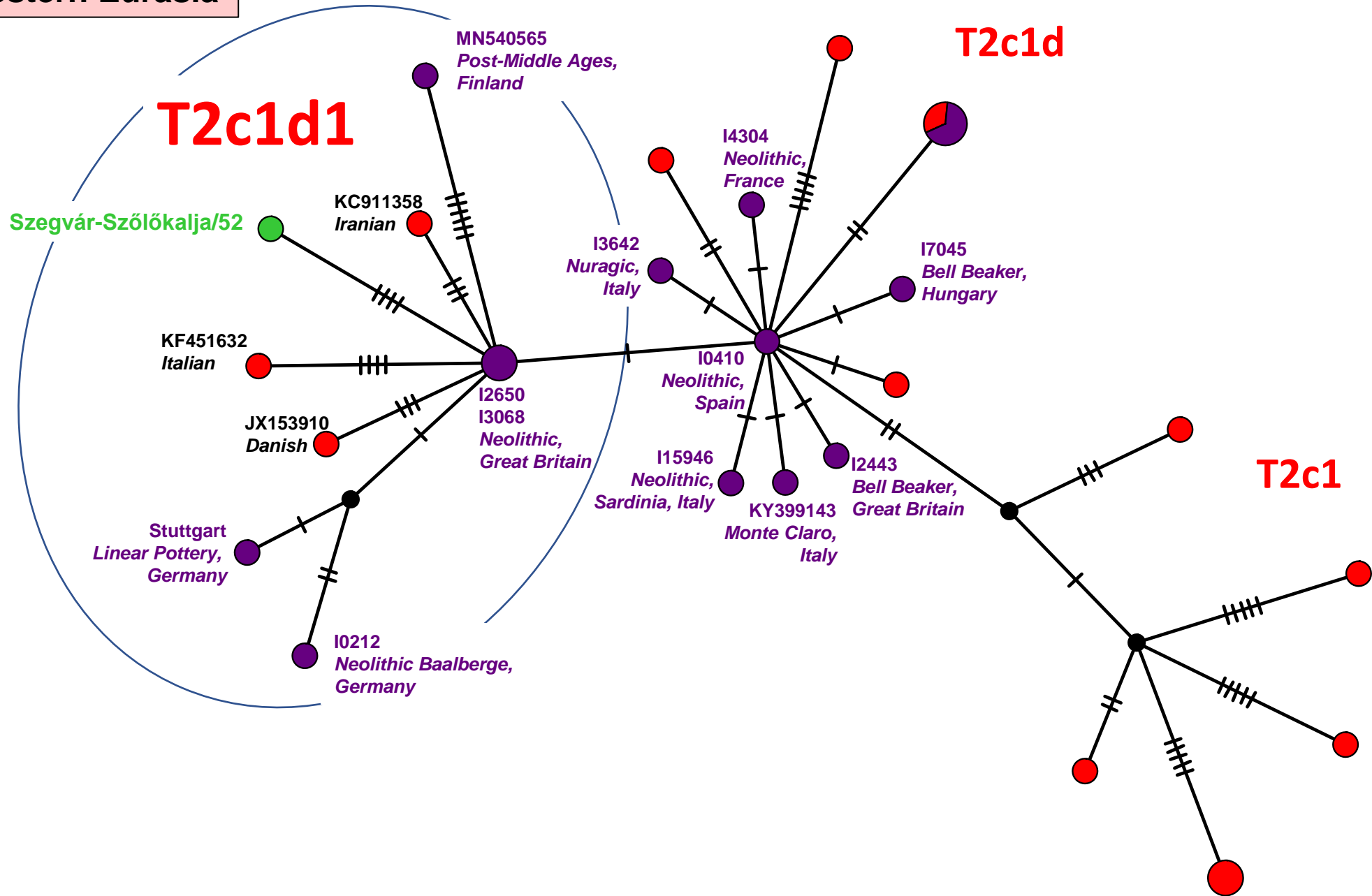


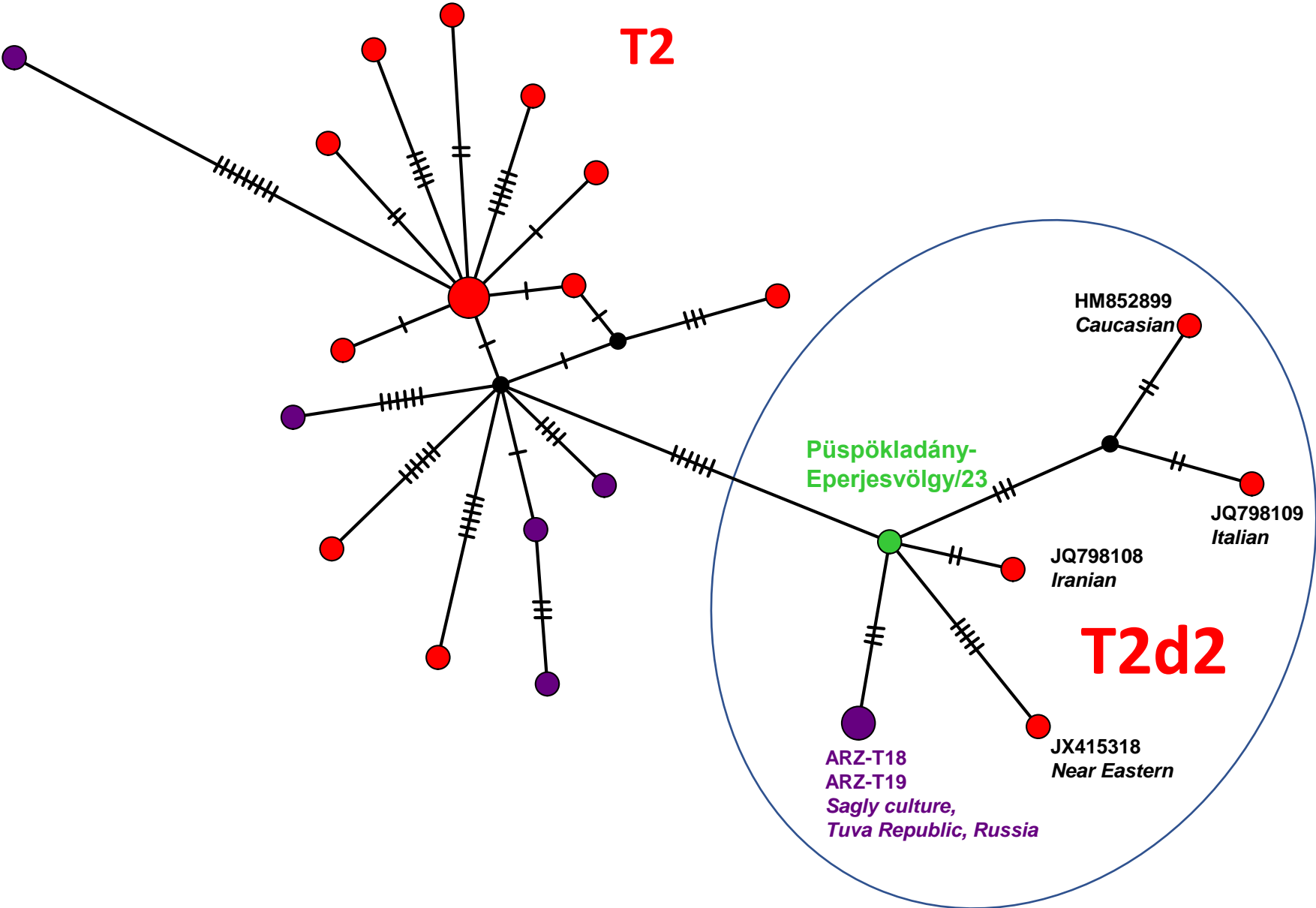
## Caucasus/Middle East

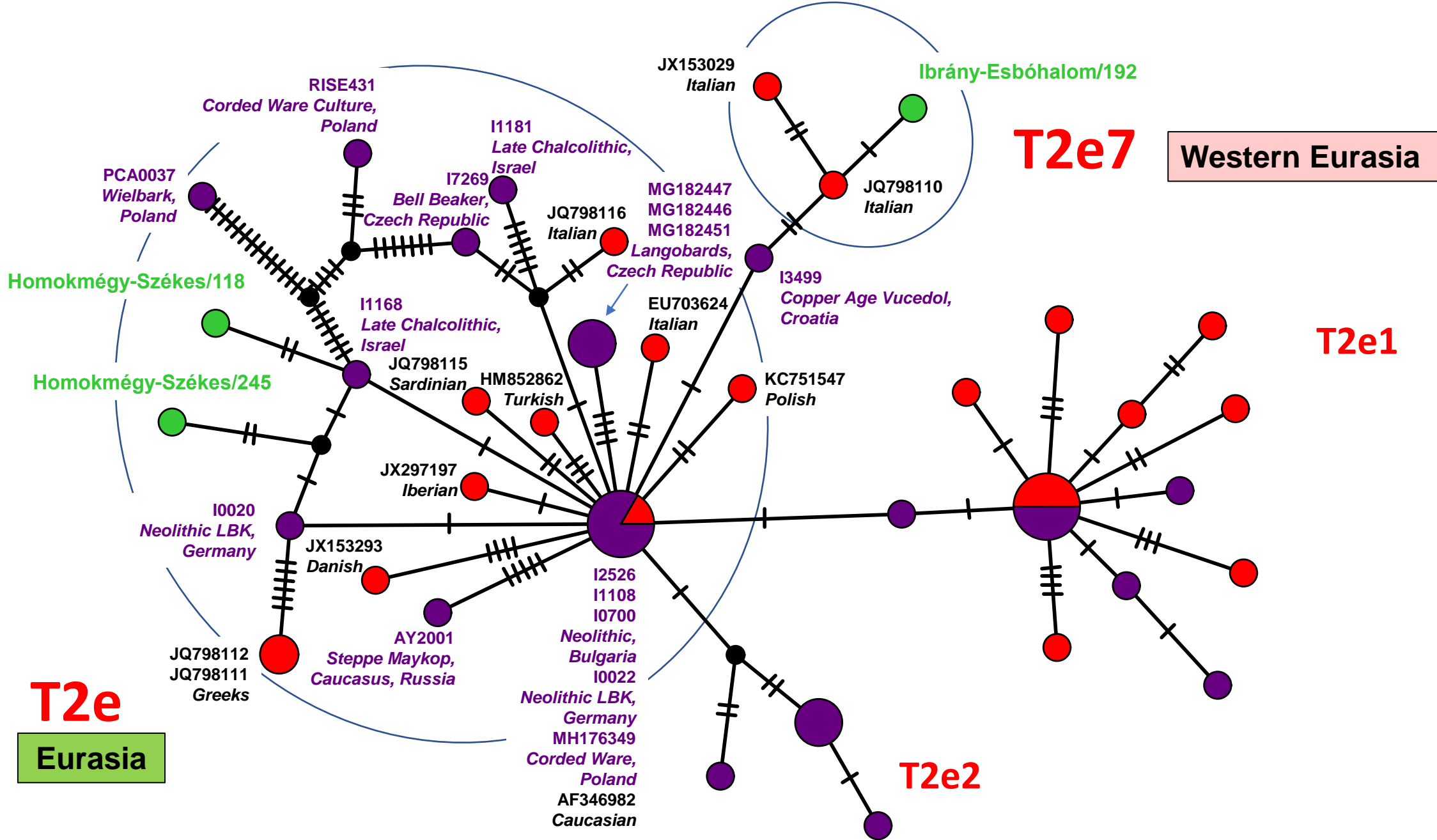




Western Eurasia



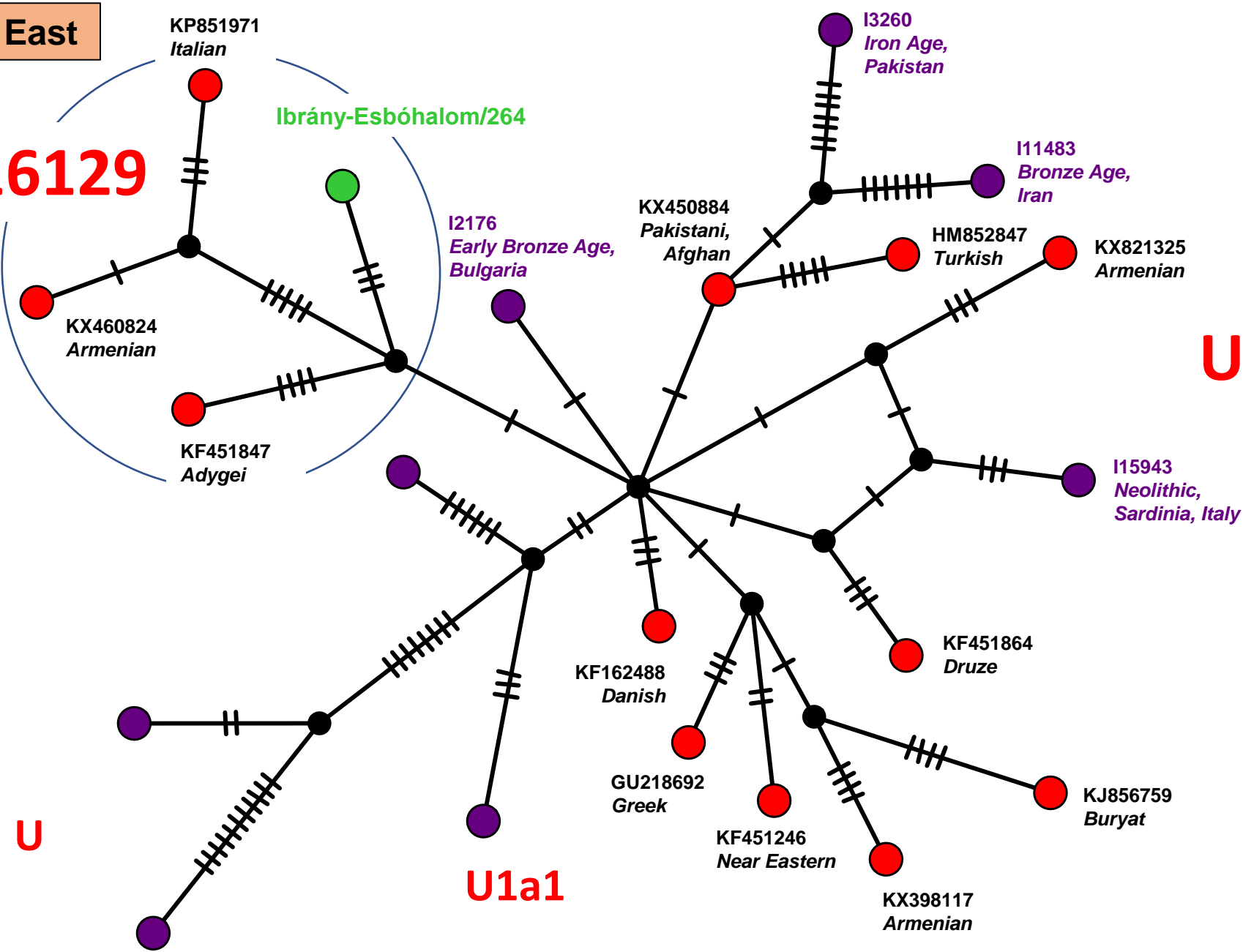






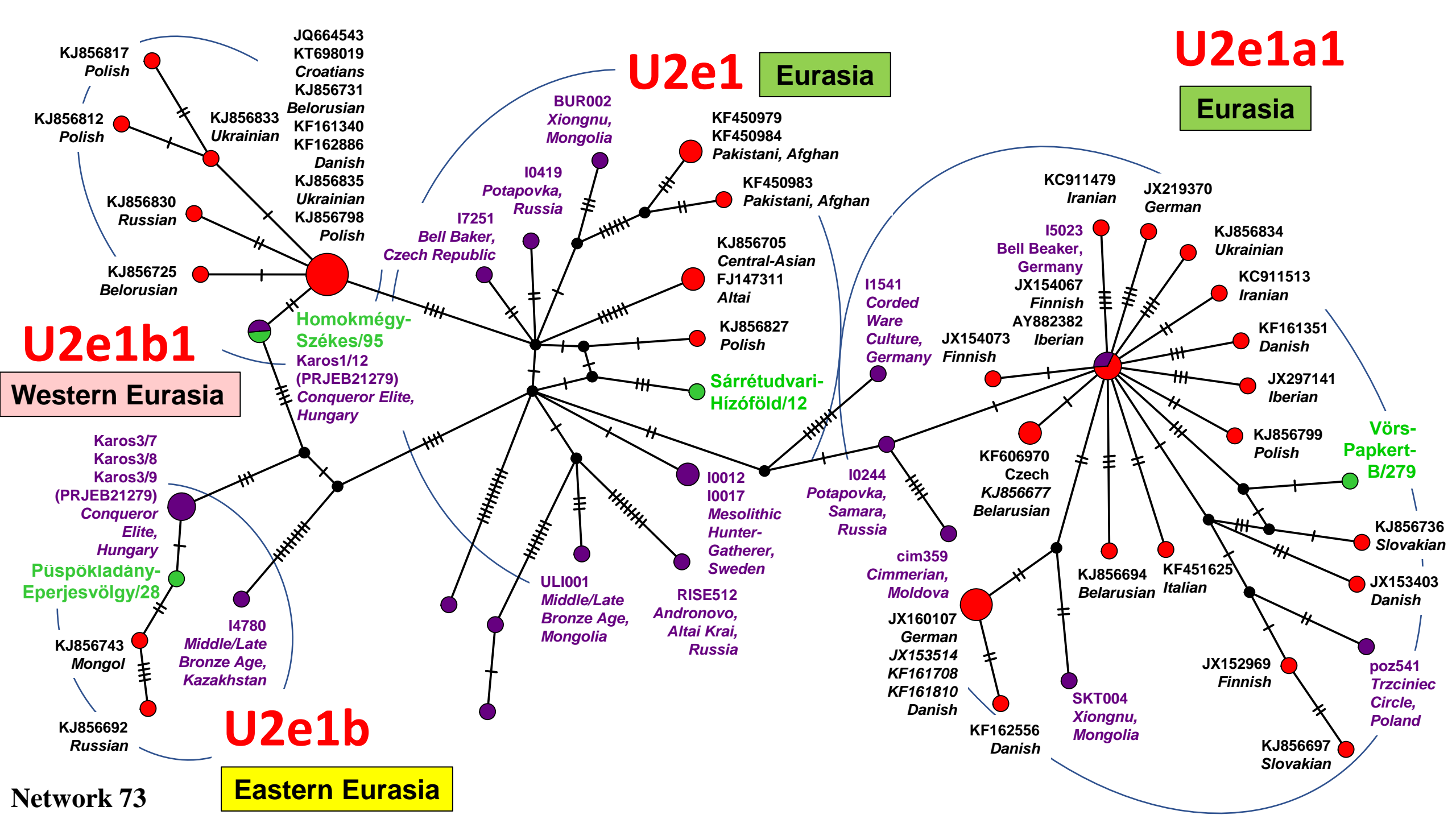
Caucasus/Middle East

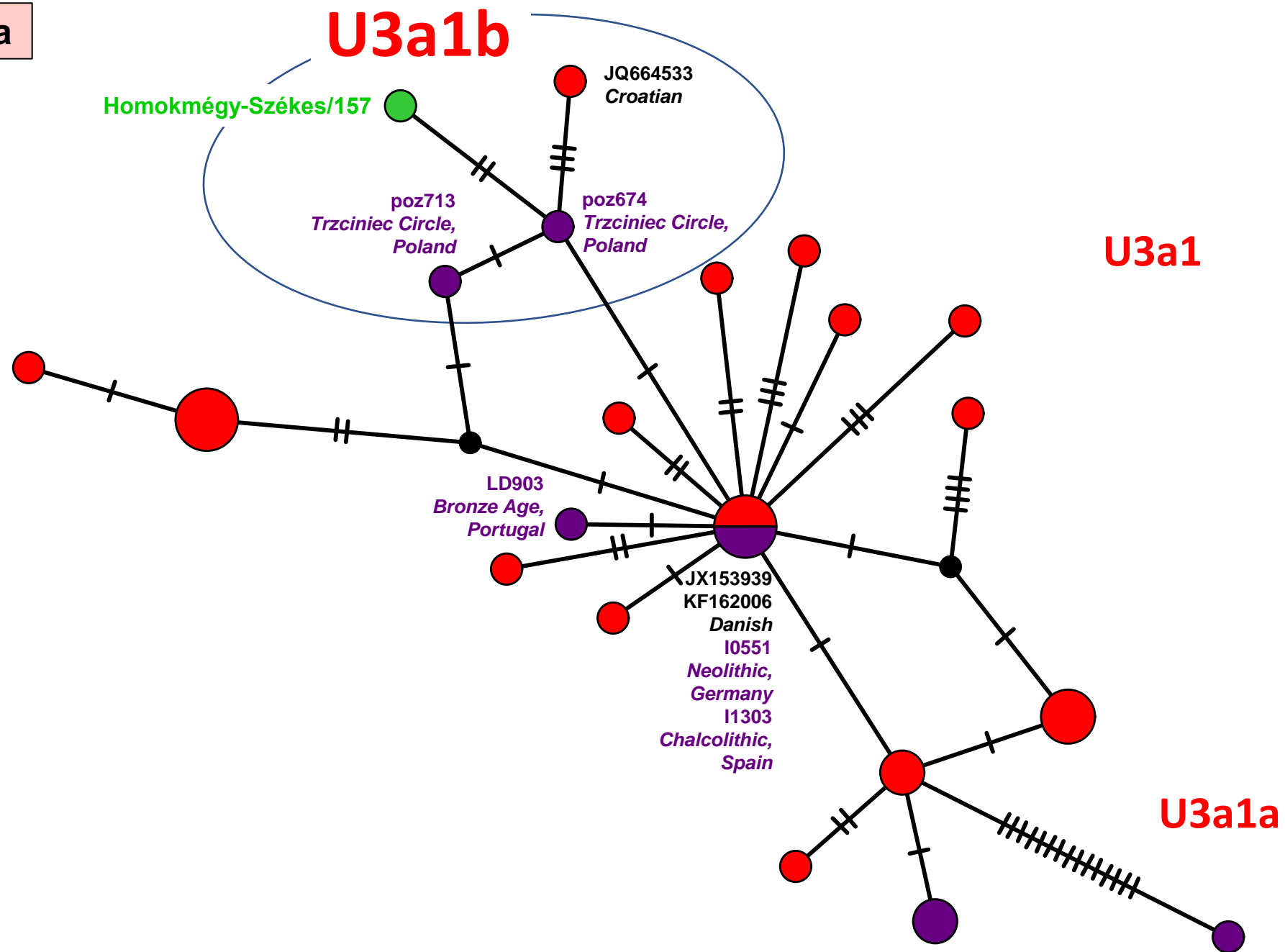
U1a1a+16129



U1a1a

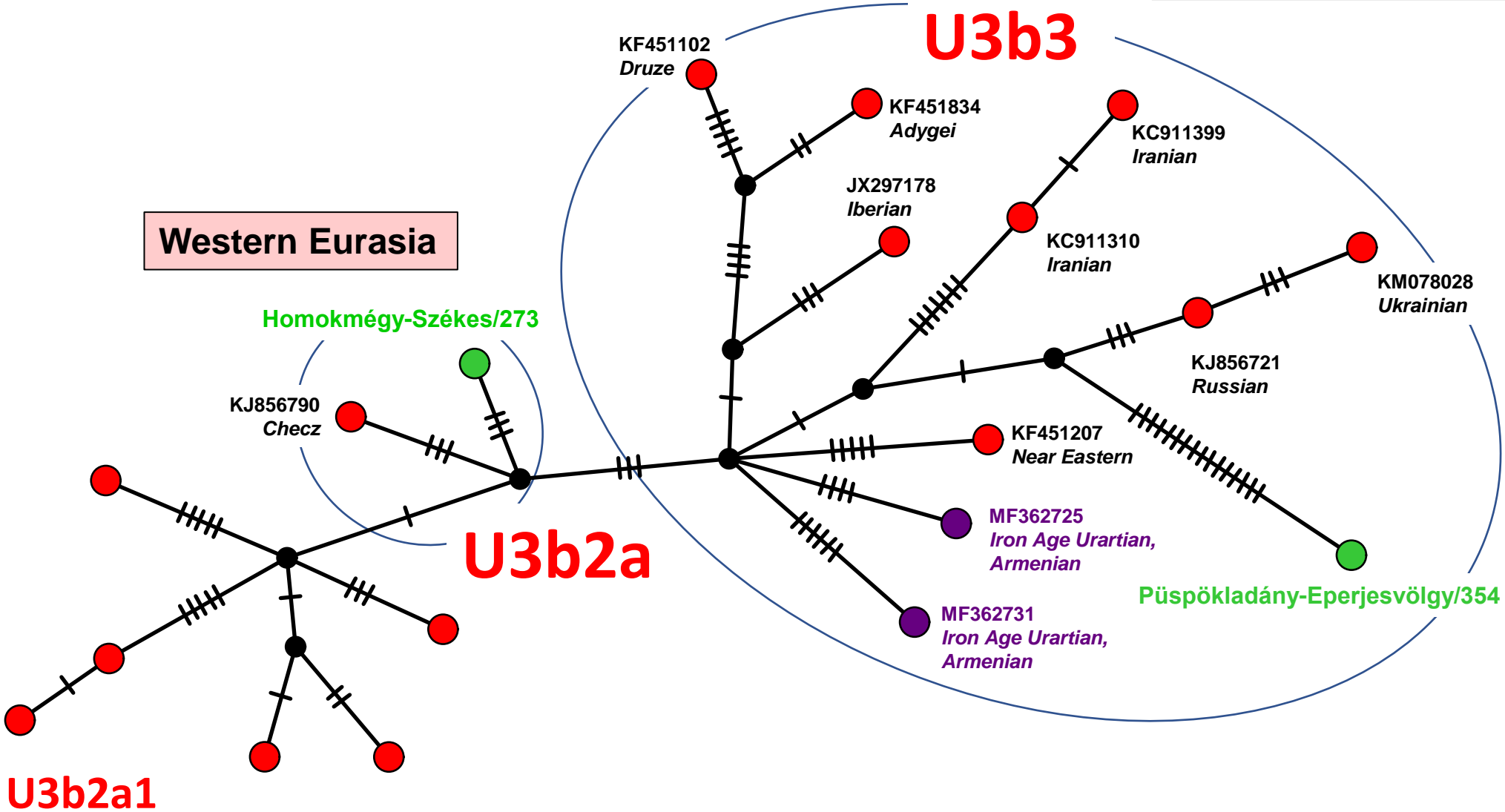
U1a1





Caucasus/Middle East

Western Eurasia

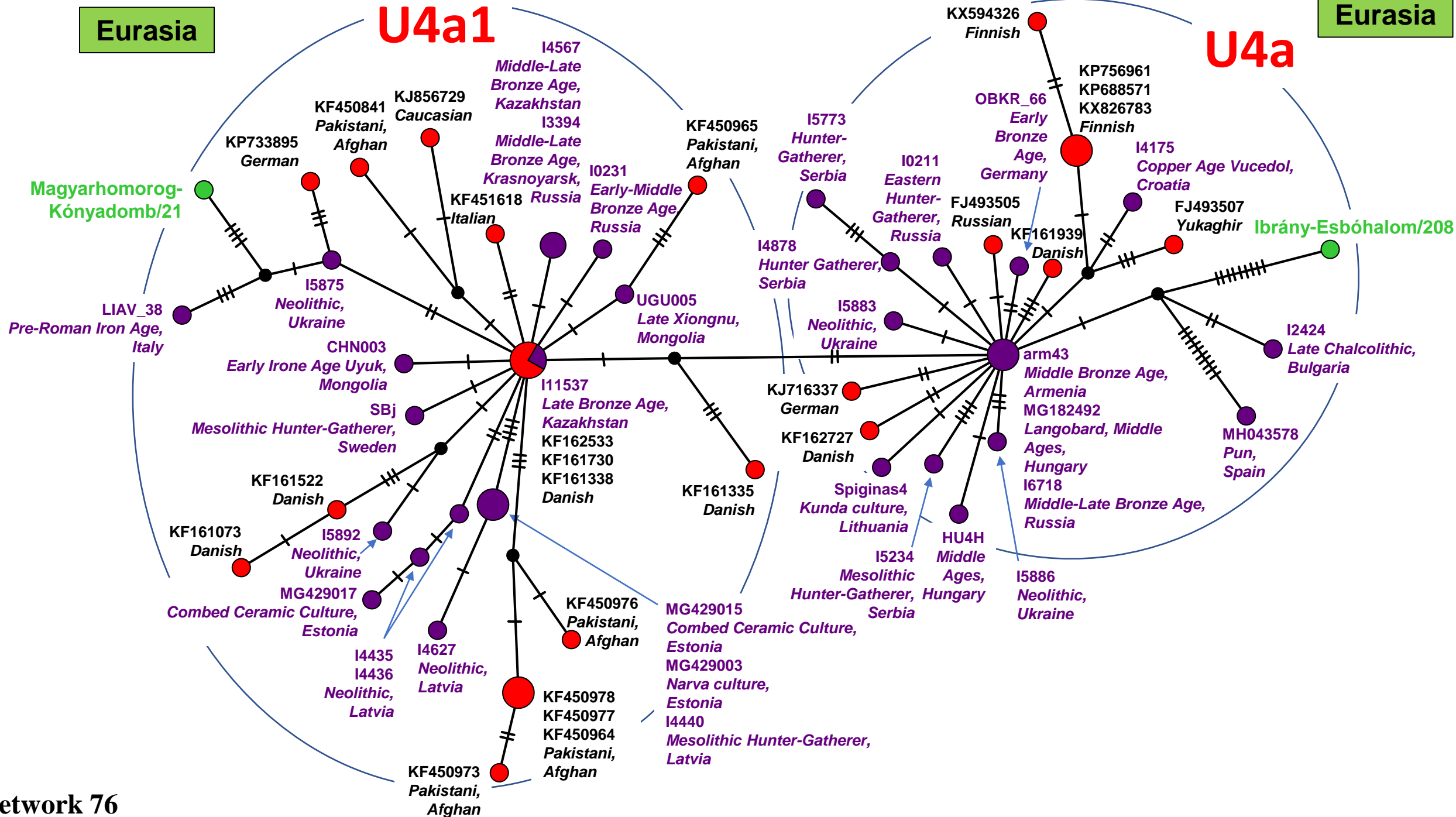


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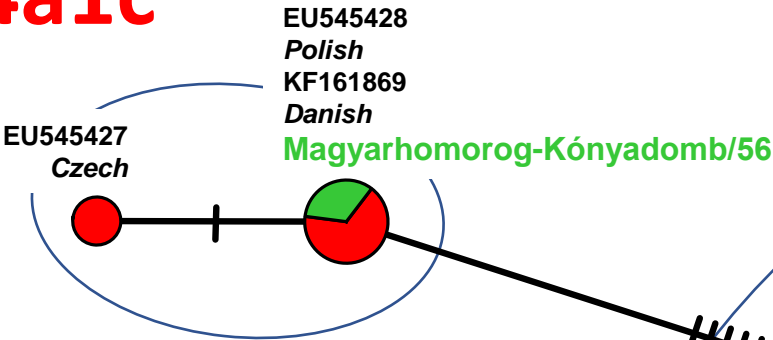
## Eurasia

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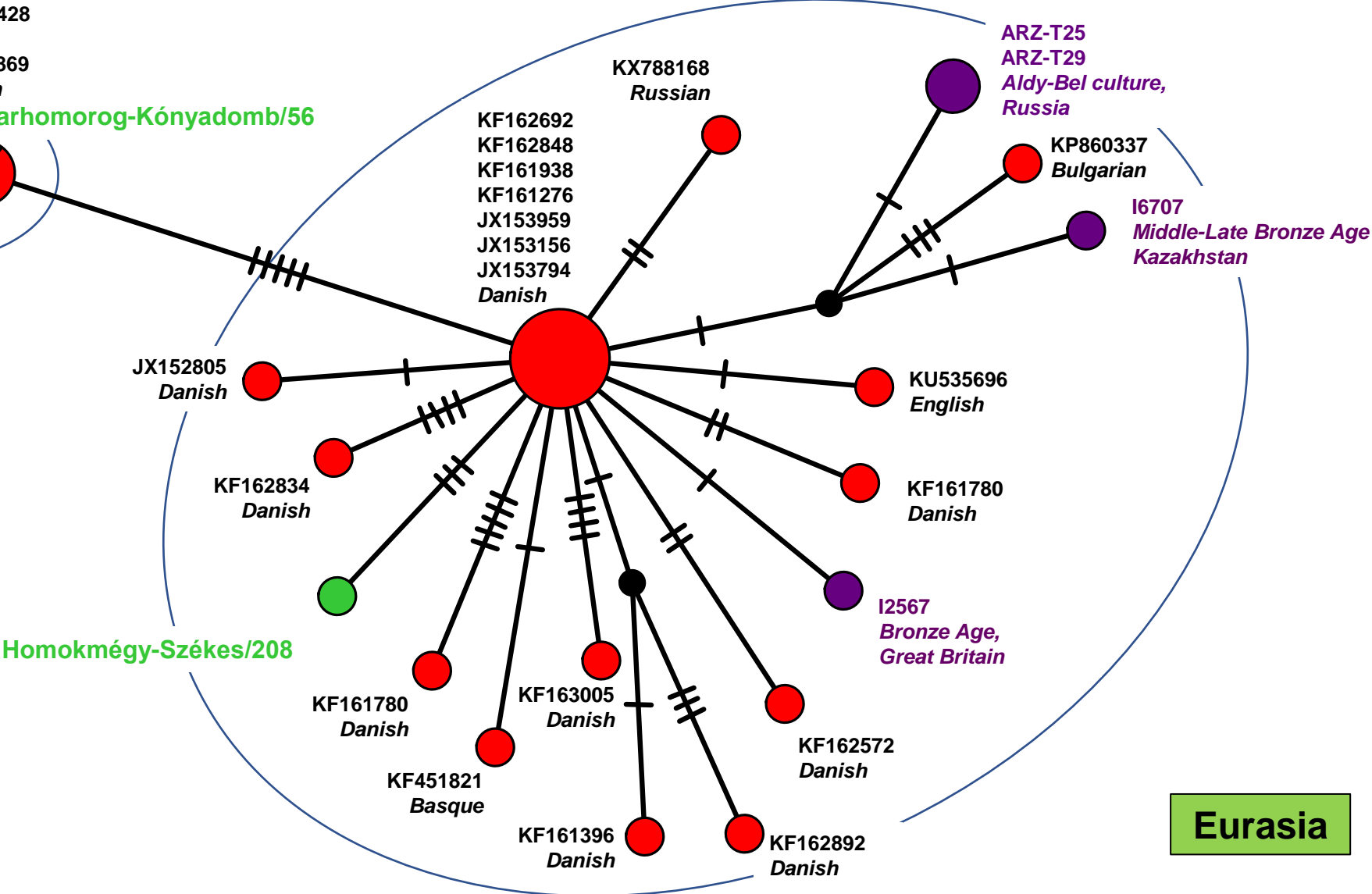
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U4a1c



U4a1a

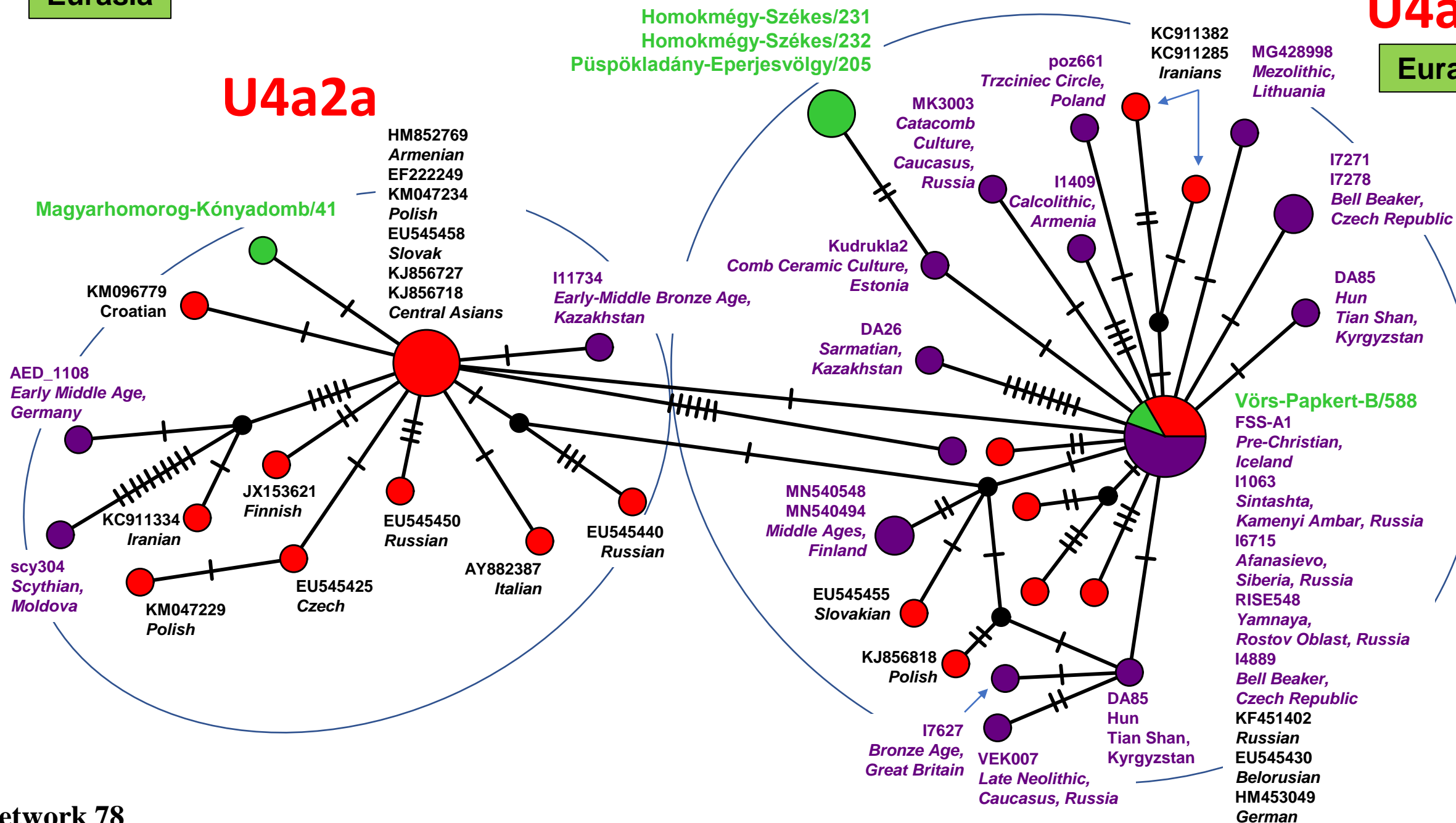


Eurasia

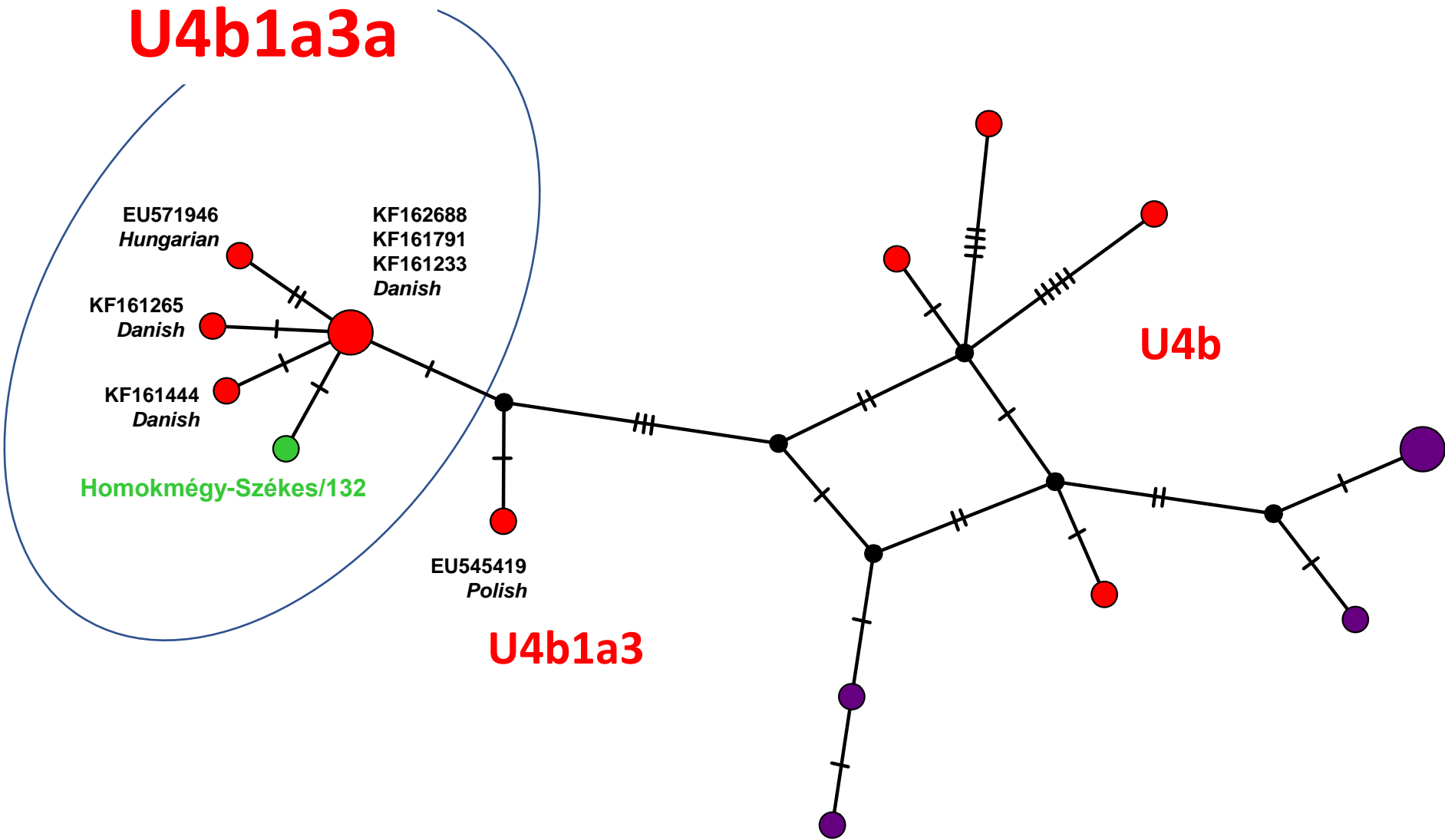
U4a2

Eurasia

U4a2a







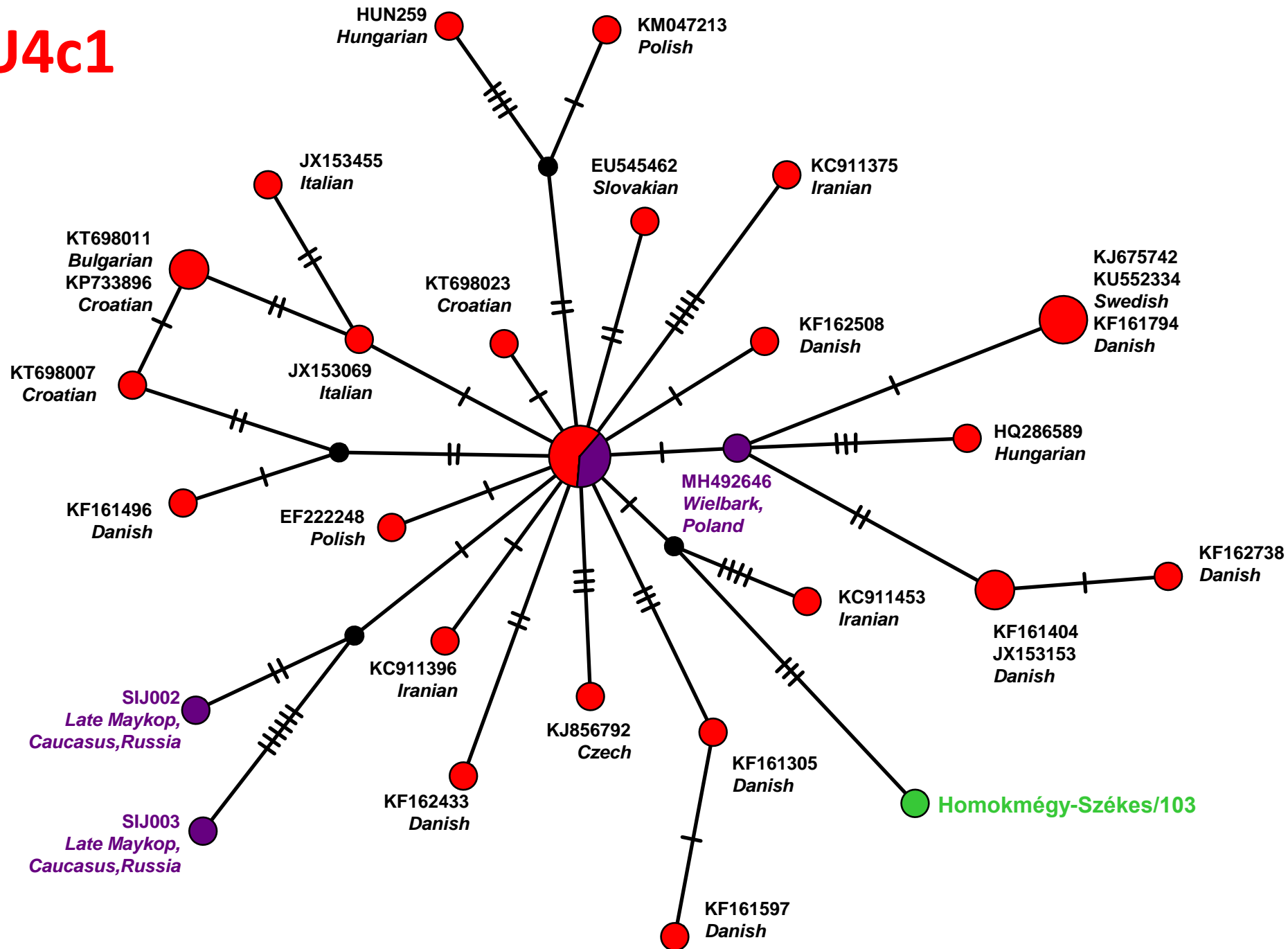


Eurasia

U4c1

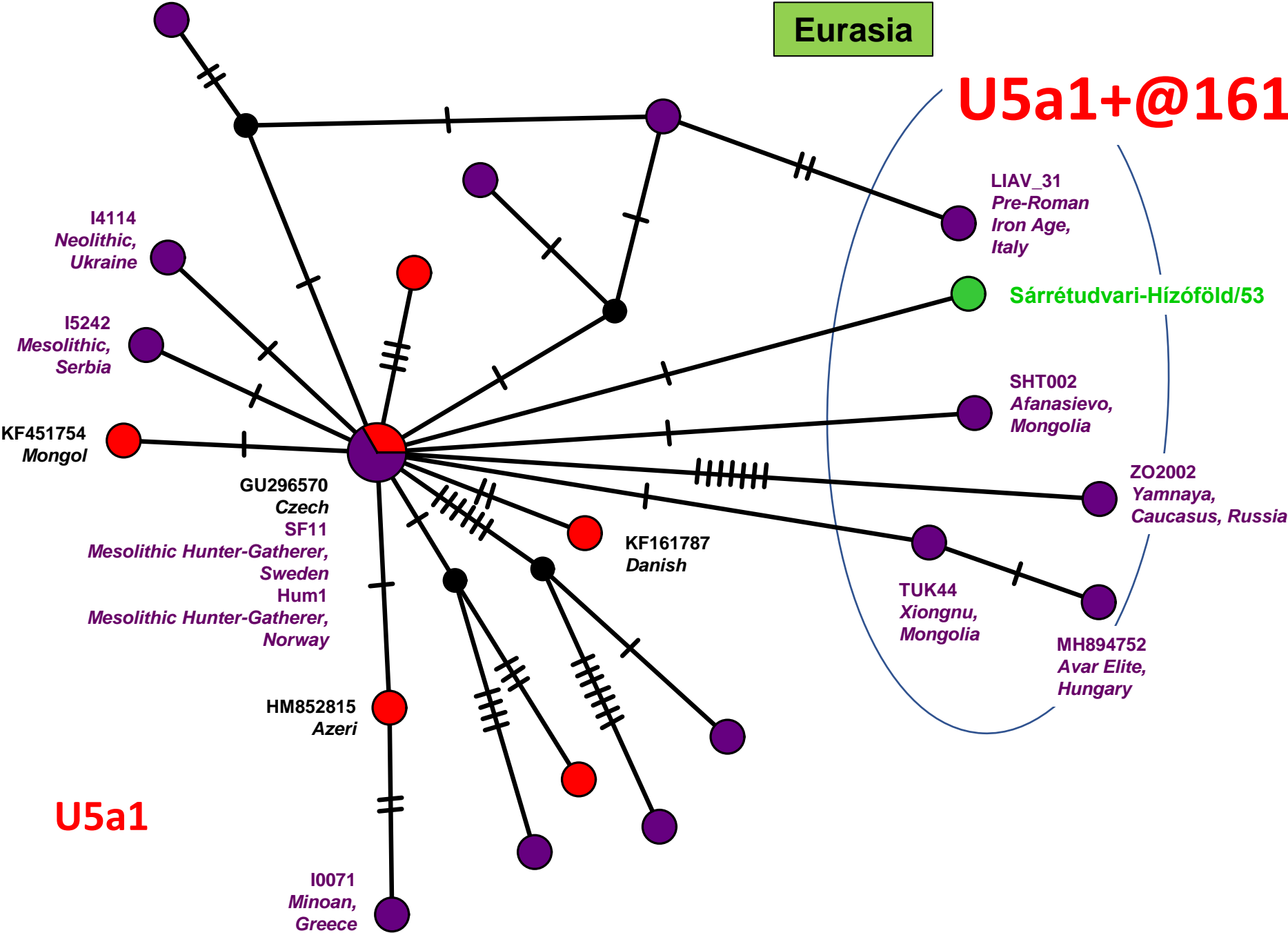
Central Circle

KP406603  
Bulgarian  
HQ591466  
Polish  
EU545465  
Belarusian  
MH176340  
Yamnaya,  
Ukraine  
RISE412  
Bronze Age,  
Armenia



Eurasia

U5a1+@16192



Püspökladány-Eperjesvölgy/441  
Püspökladány-Eperjesvölgy/442

U5a1a1h

Western Eurasia

U5a1a1

Eurasia

Magyarhomorog-Kónyadomb/153

MN540469  
MN540471  
Roman Iron Age,  
Finland  
I7577  
Bronze Age,  
Great Britain  
Kzb007  
Srubnaya,  
Bashkortostan,  
Russia  
I0439  
I0438  
Yamnaya,  
Samara, Russia  
I1767  
Bell Baker,  
Great Britain

I4069  
Bell Baker,  
Netherlands  
I3952  
I5278  
Afanasievo,  
Russia  
I4789  
Middle/Late  
Bronze Age,  
Kazakhstan  
Hconq4  
Conqueror Elite,  
Hungary

KF450864  
Pakistani, Afghan  
KF161767  
KF161166  
KF161673  
JX153722  
KF161191  
Danish  
GU296601  
Russian

GU296581  
Belarusian  
GU296564  
Czech

KF161221  
Danish

Sárrétudvari-Hízóföld/251

GU296558  
Russian

U5a1a1a

Western Eurasia

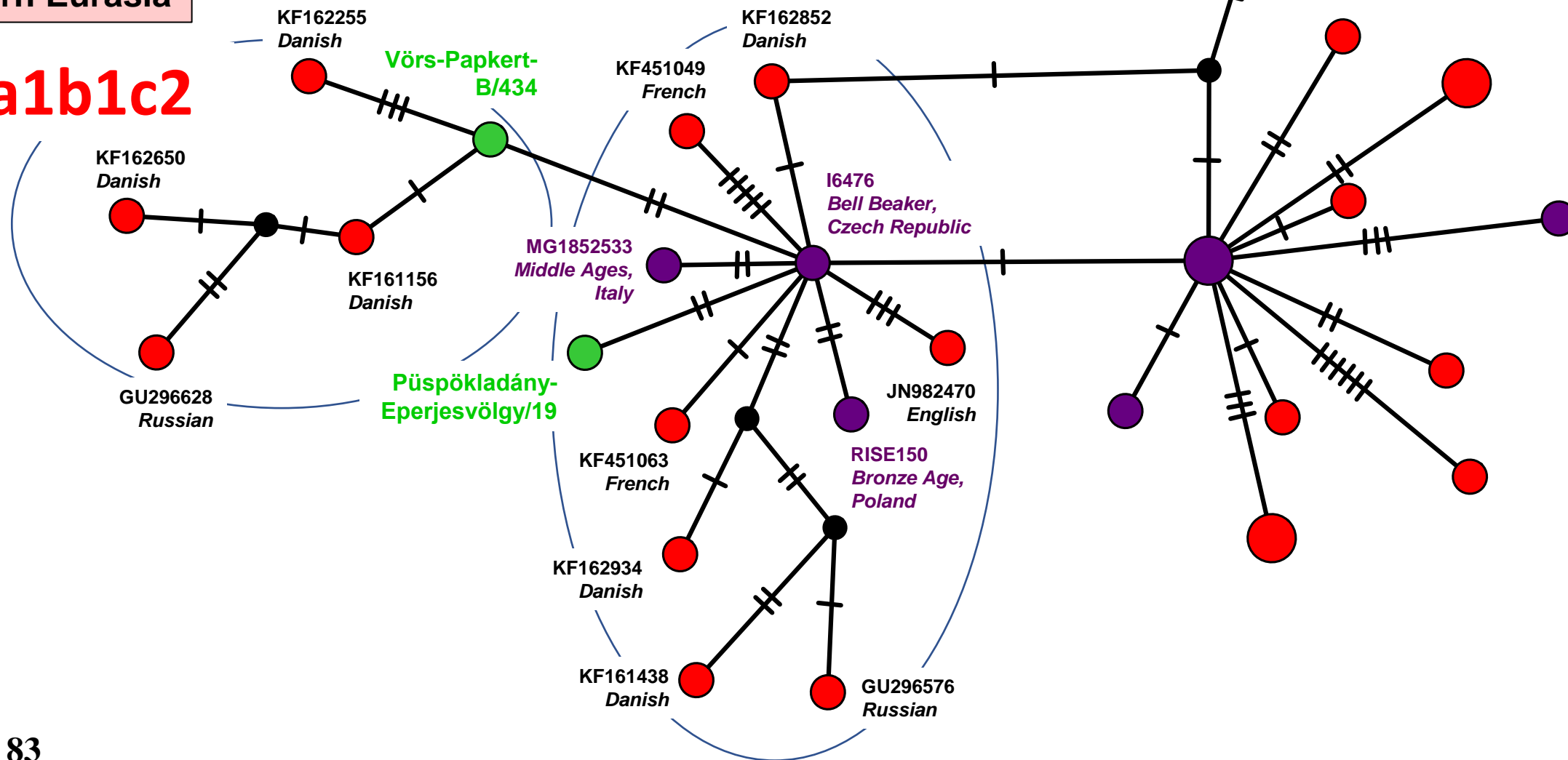
Western Eurasia

U5a1b1

U5a1b

Western Eurasia

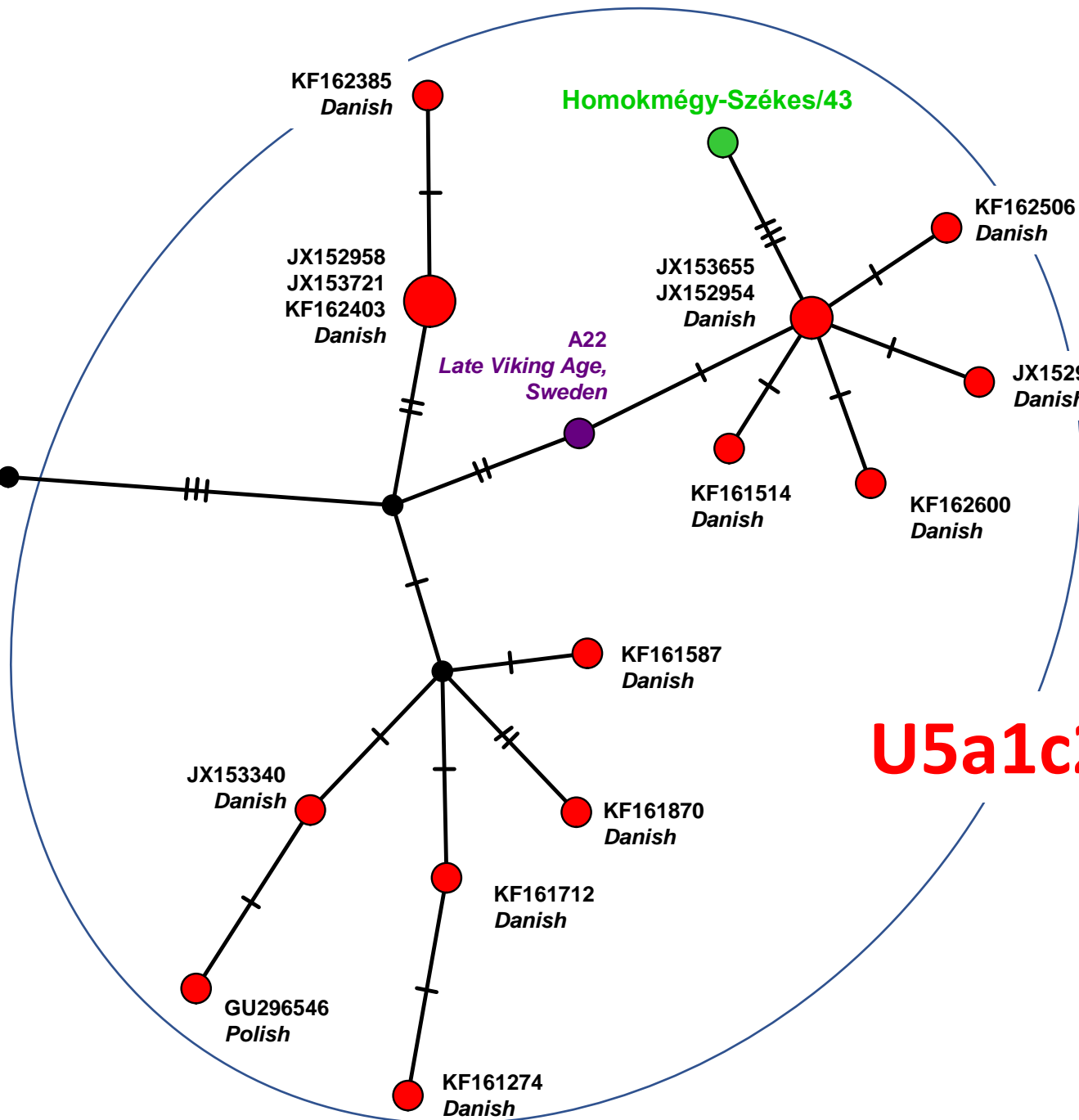
U5a1b1c2



Western Eurasia

U5a1c

U5a1c2



Eurasia

U5a1d2a

U5a1d1

U5a1d2

U5a1d

U5a1

Vörs-Papkert-B/51

RISE546  
Yamnaya,  
Rostov Oblast, Russia

Homokmégy-Székes/215

I3388  
Afanasievo,  
Altai, Russia

FJ147317  
Altai

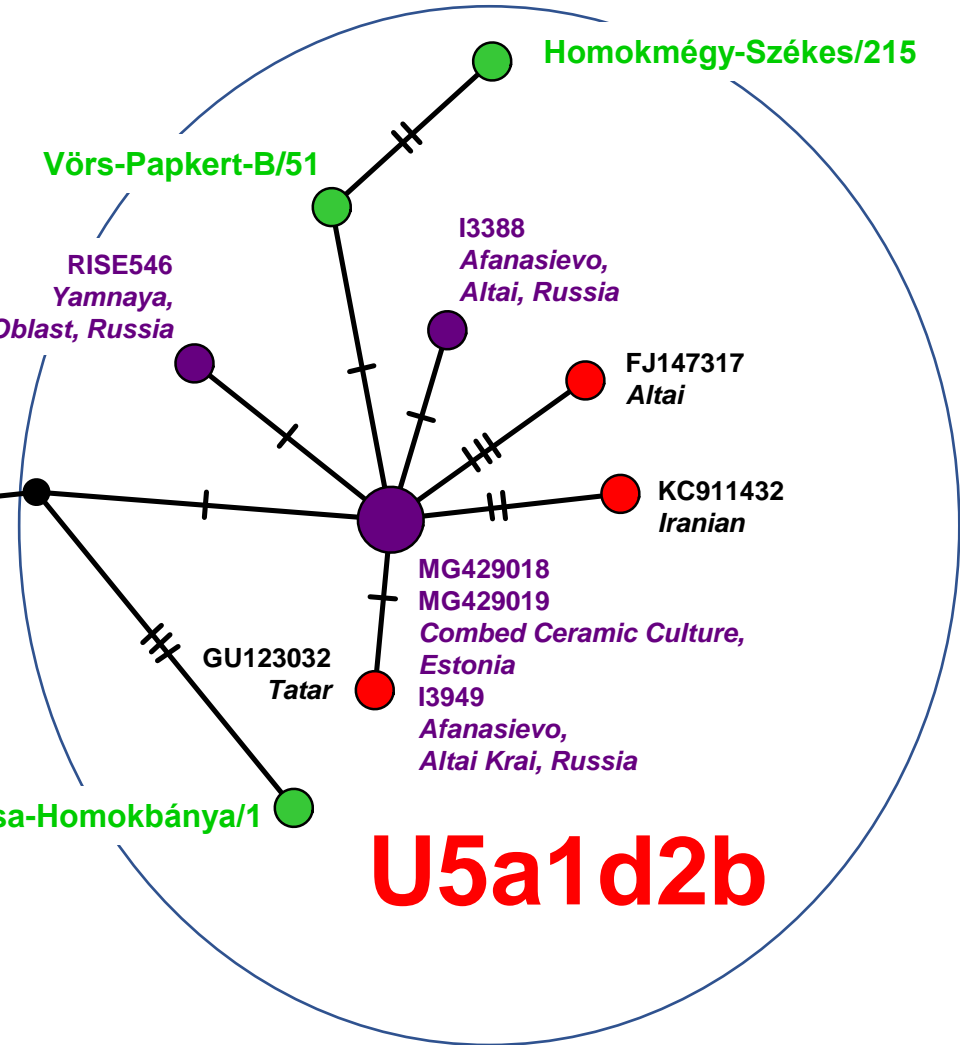
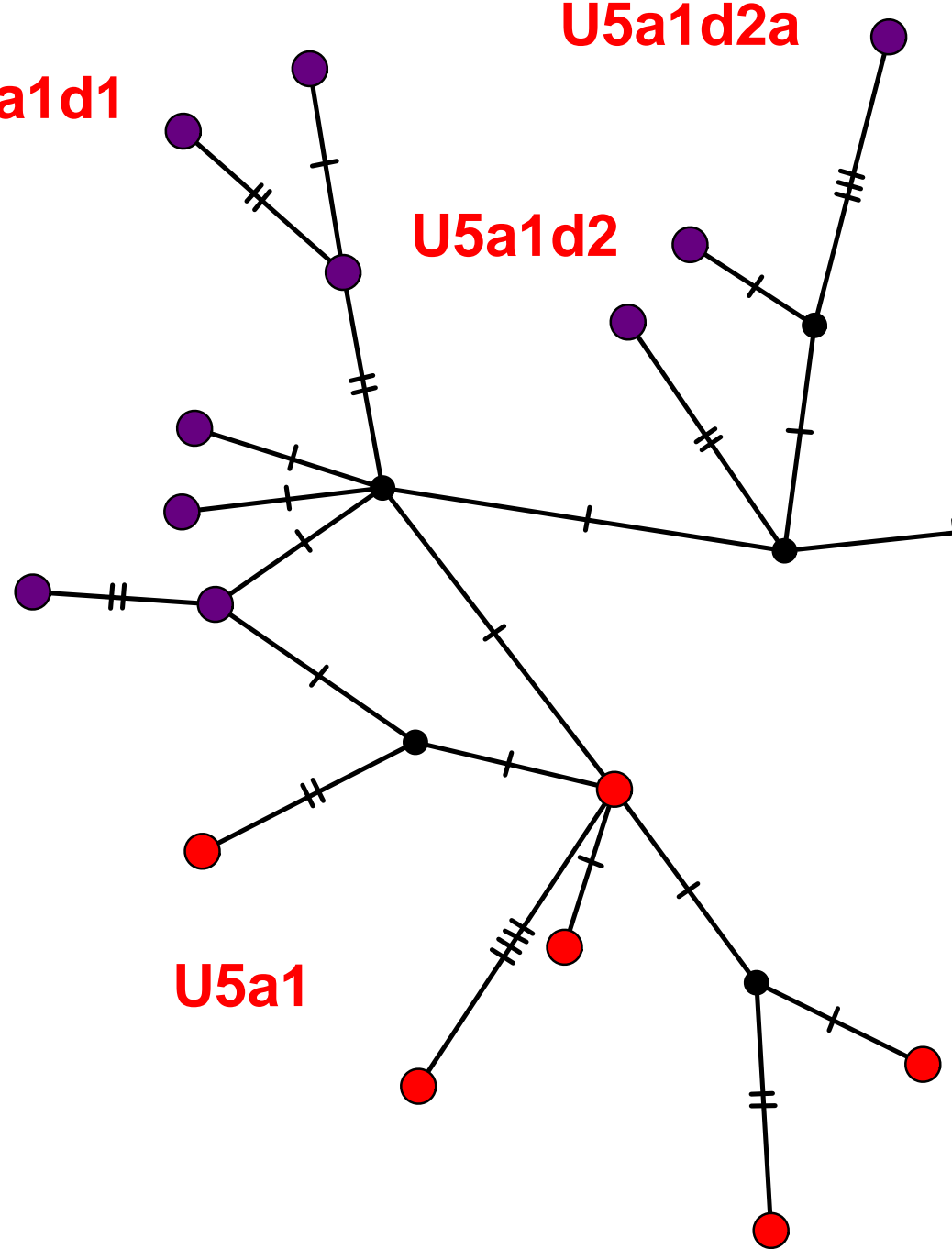
KC911432  
Iranian

MG429018  
MG429019  
Combed Ceramic Culture,  
Estonia  
I3949  
Afanasievo,  
Altai Krai, Russia

GU123032  
Tatar

Nagytarcsa-Homokbánya/1

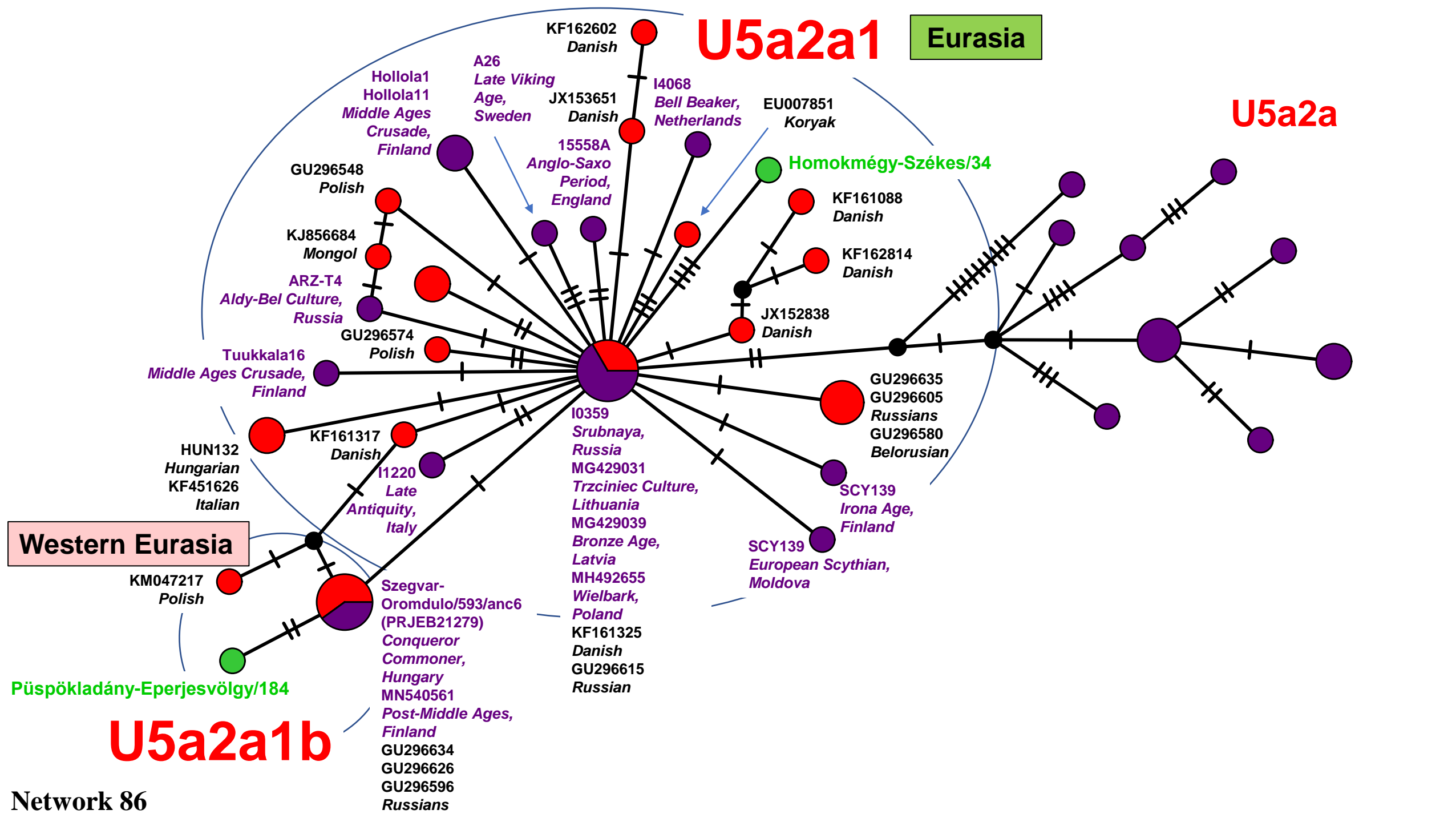
U5a1d2b



# U5a2a1

Eurasia

# U5a2a



Western Eurasia

U5a2b

Sárrétudvari-Hízóföld/29

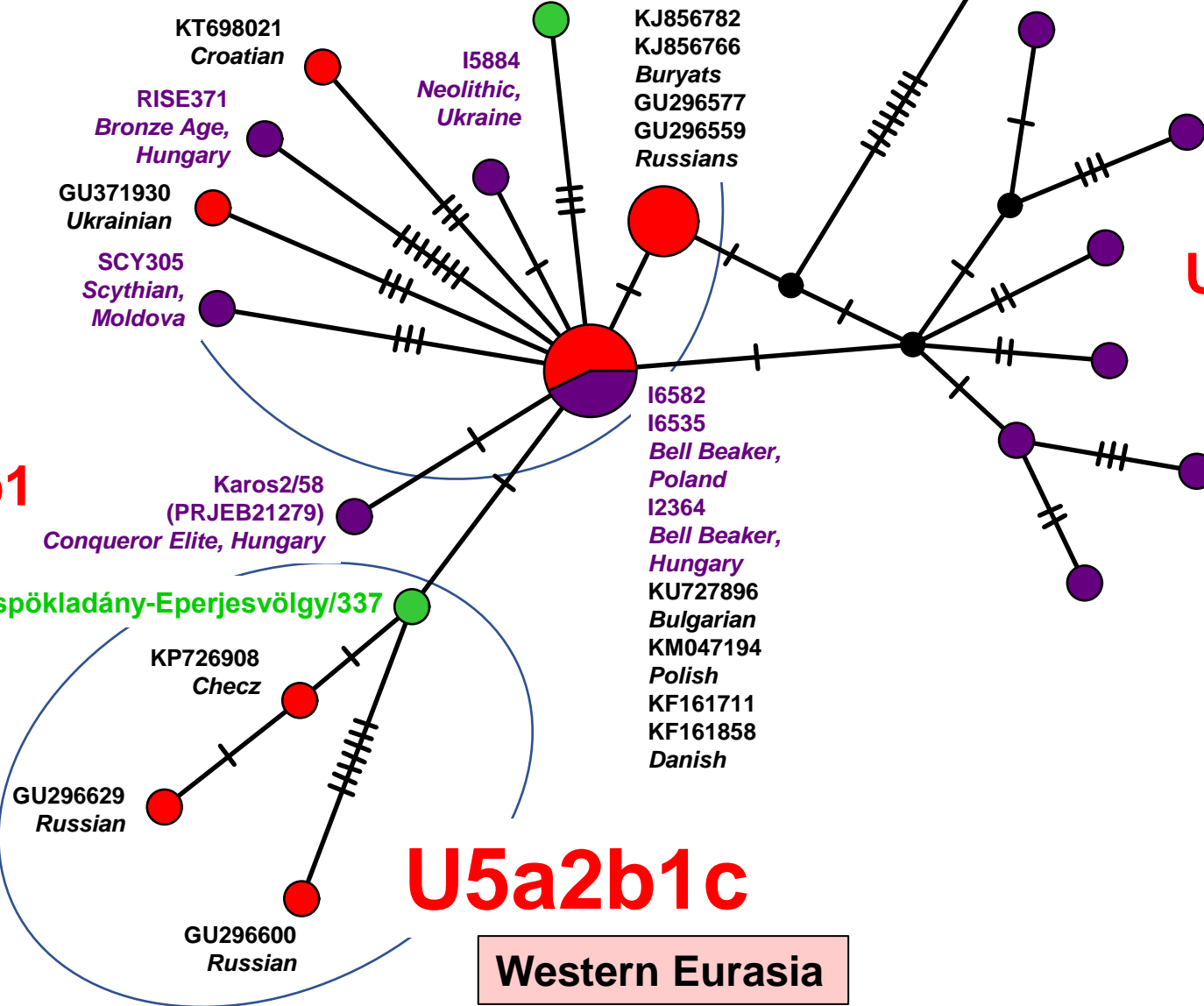
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Püspökladány-Eperjesvölgy/337

U5a2b1c

Western Eurasia

U5a2



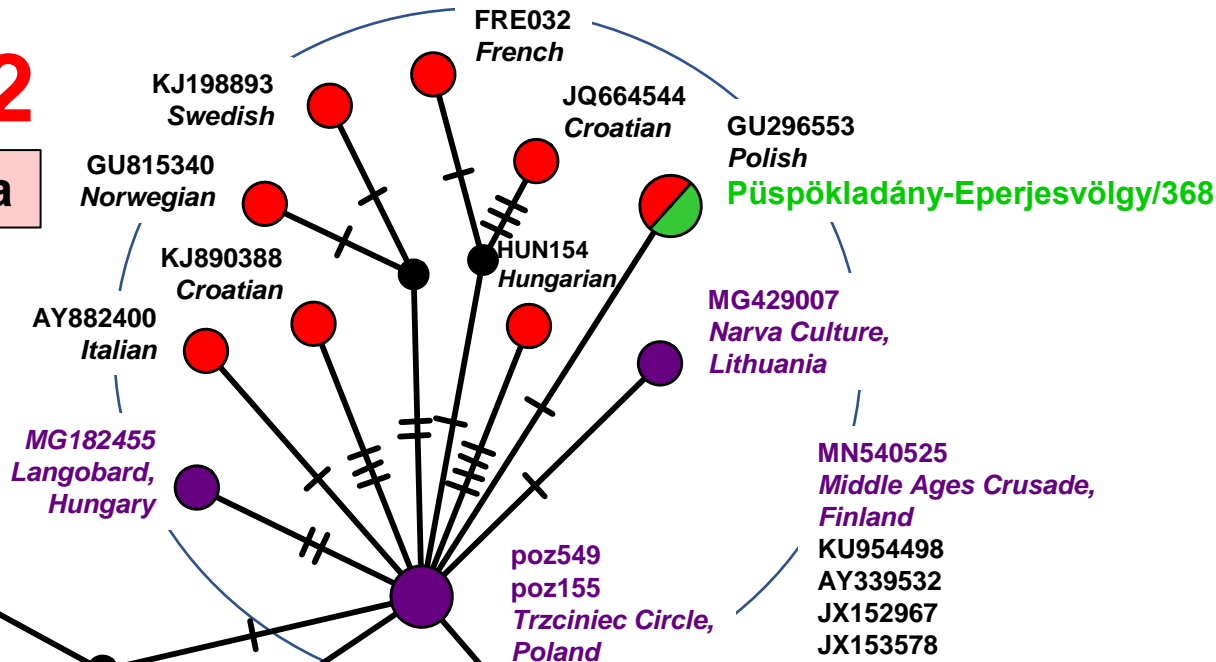
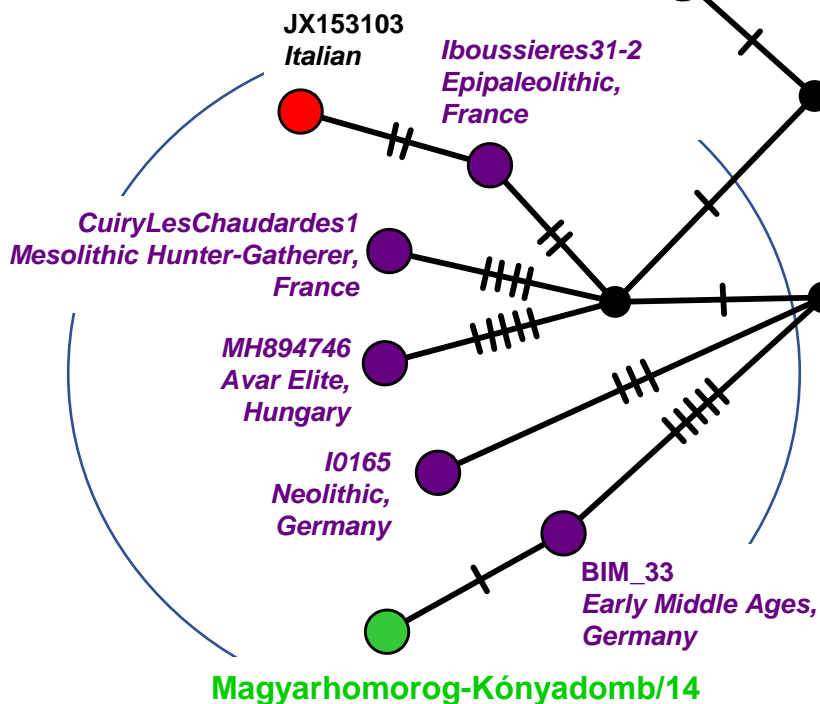


# U5b1b1+@16192

Western Eurasia

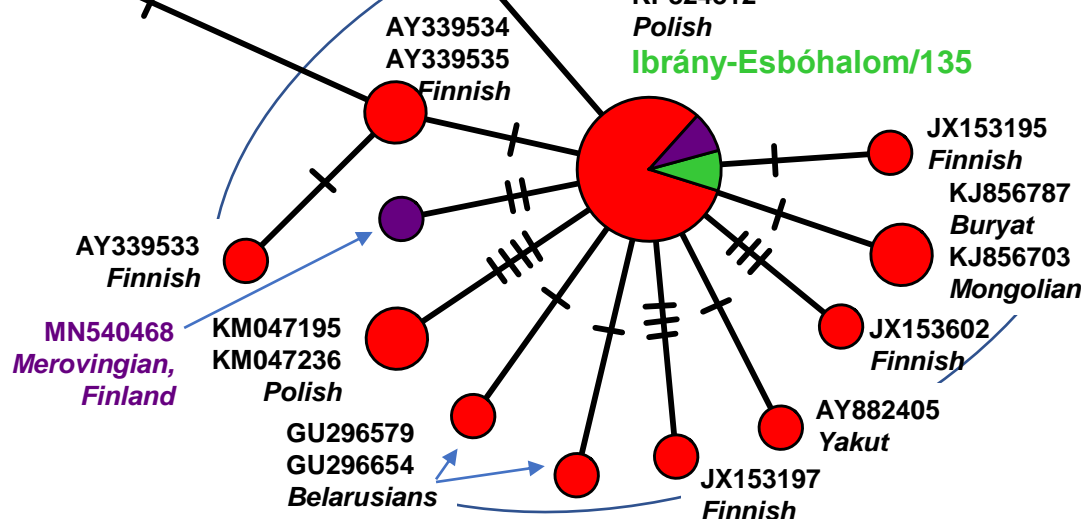
Western Eurasia

## U5b1b

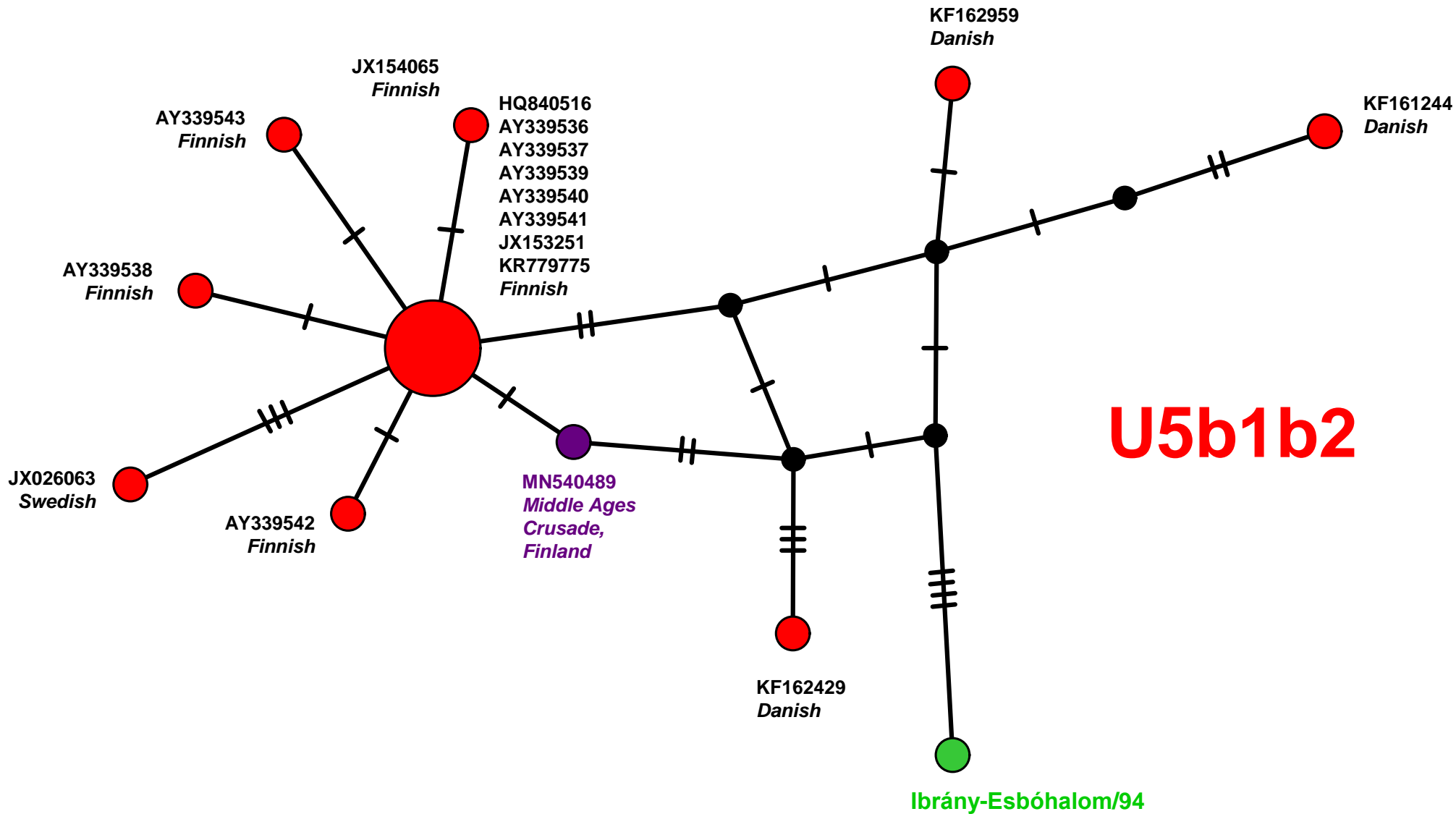


## U5b1b1a

Eurasia



Western Eurasia

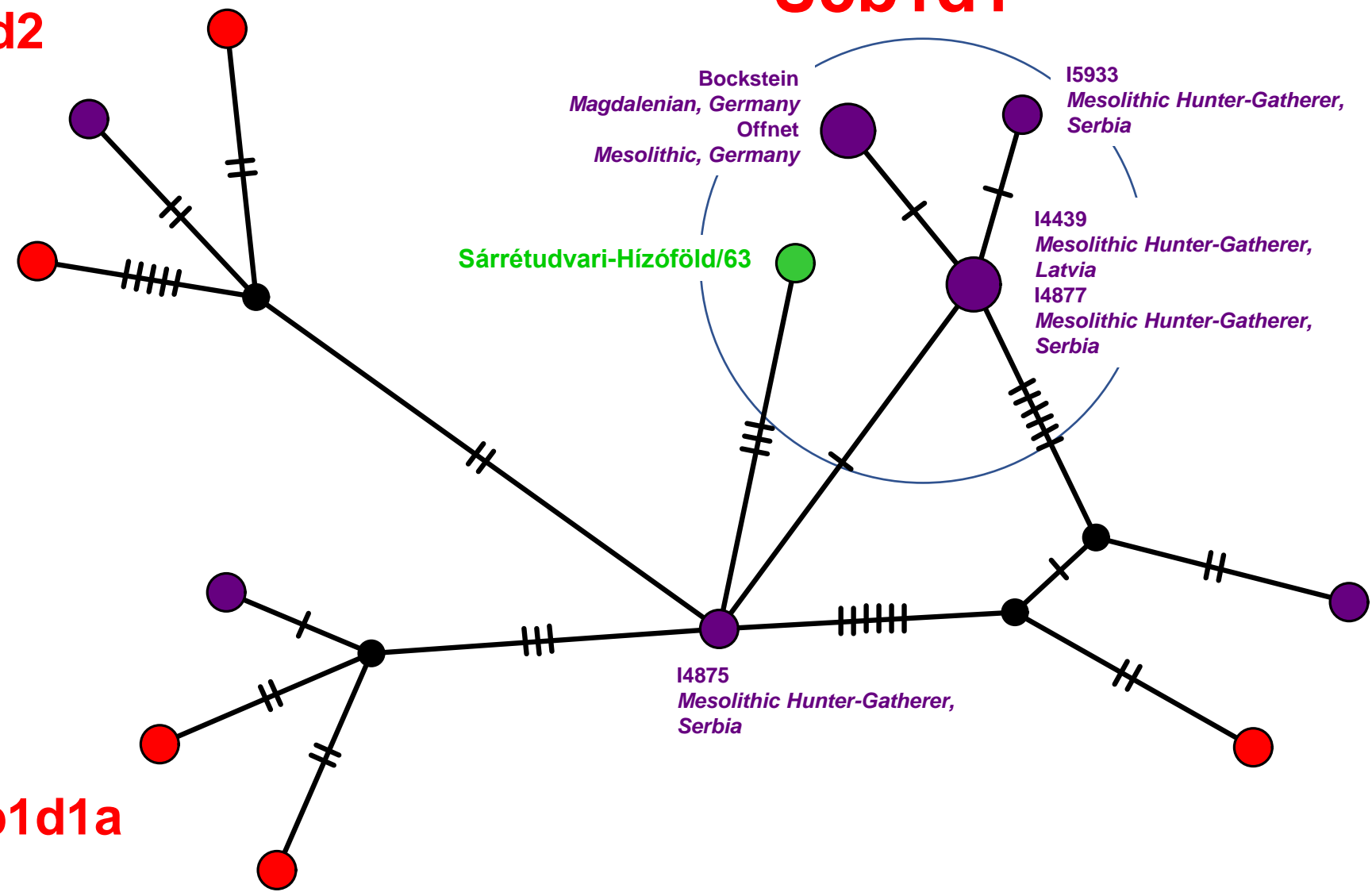


U5b1d2

U5b1d1

U5b1d1b

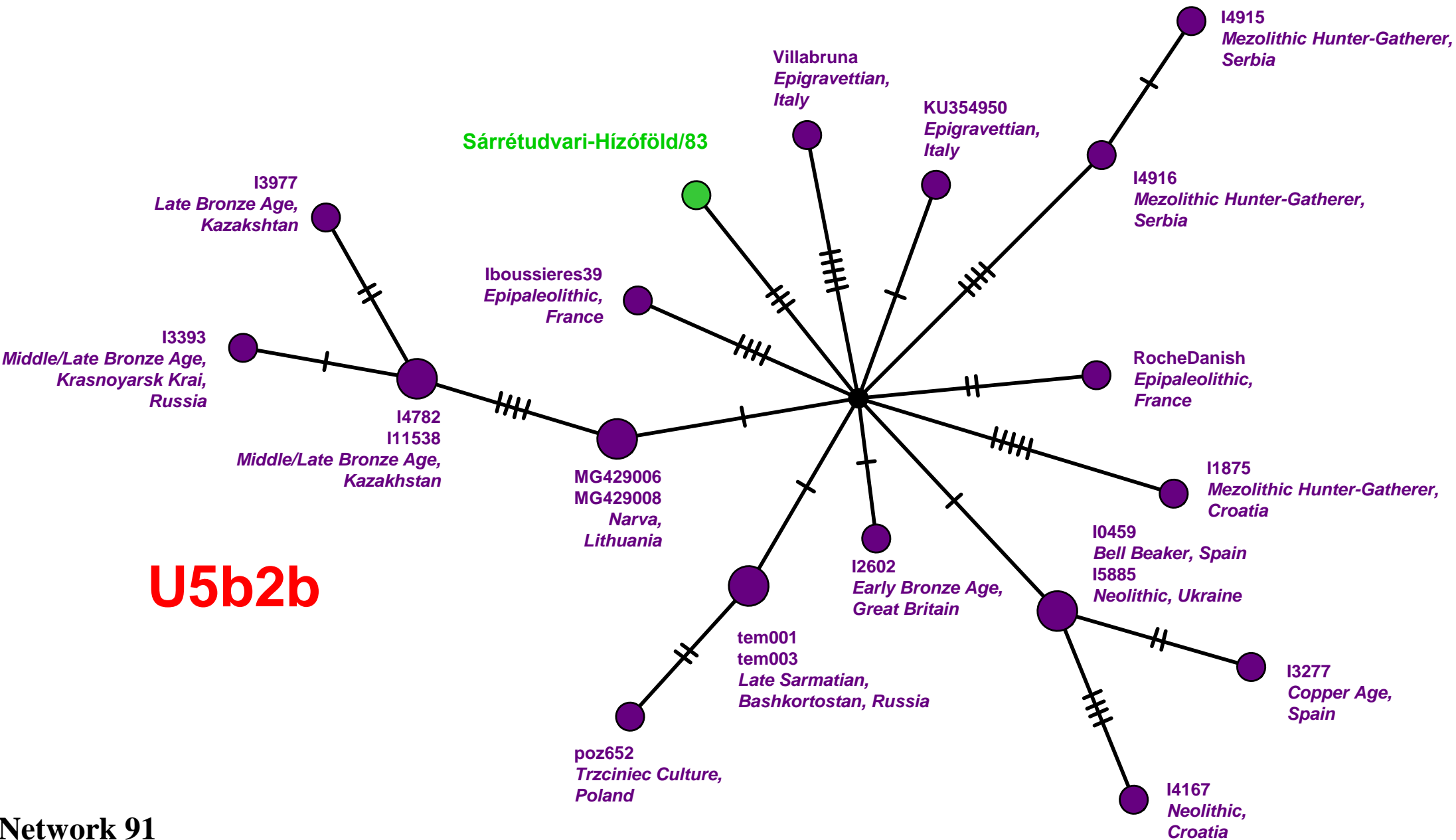
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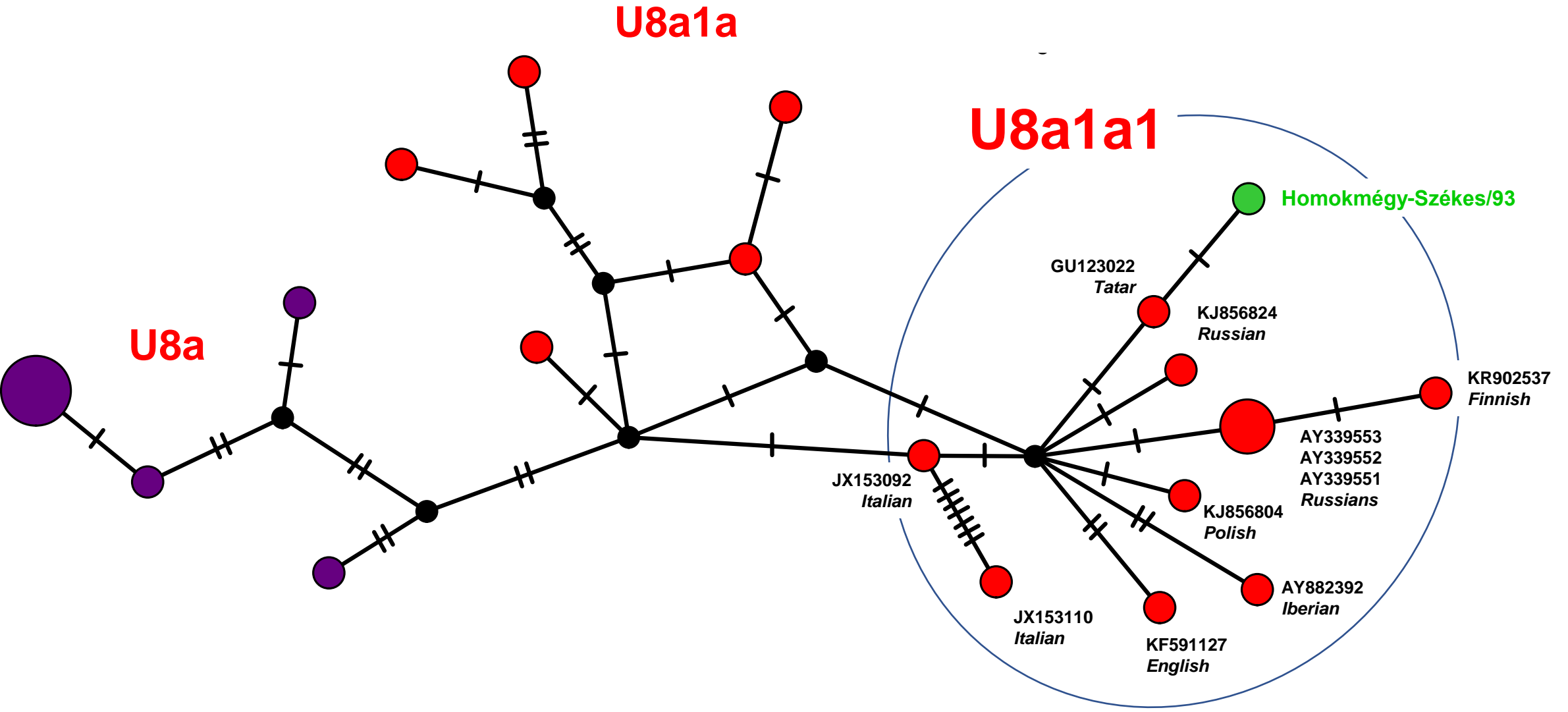


# Eurasia

Sárrétudvari-Hízóföld/83

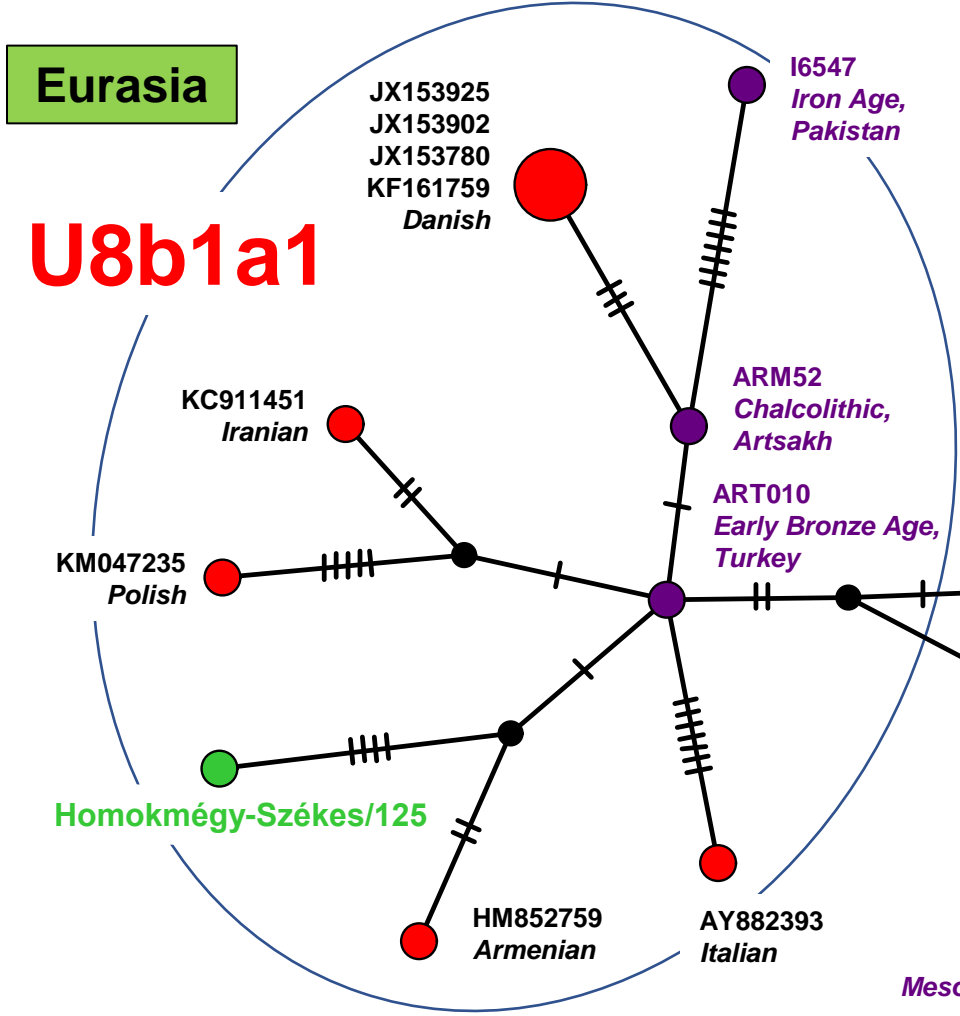
U5b2b





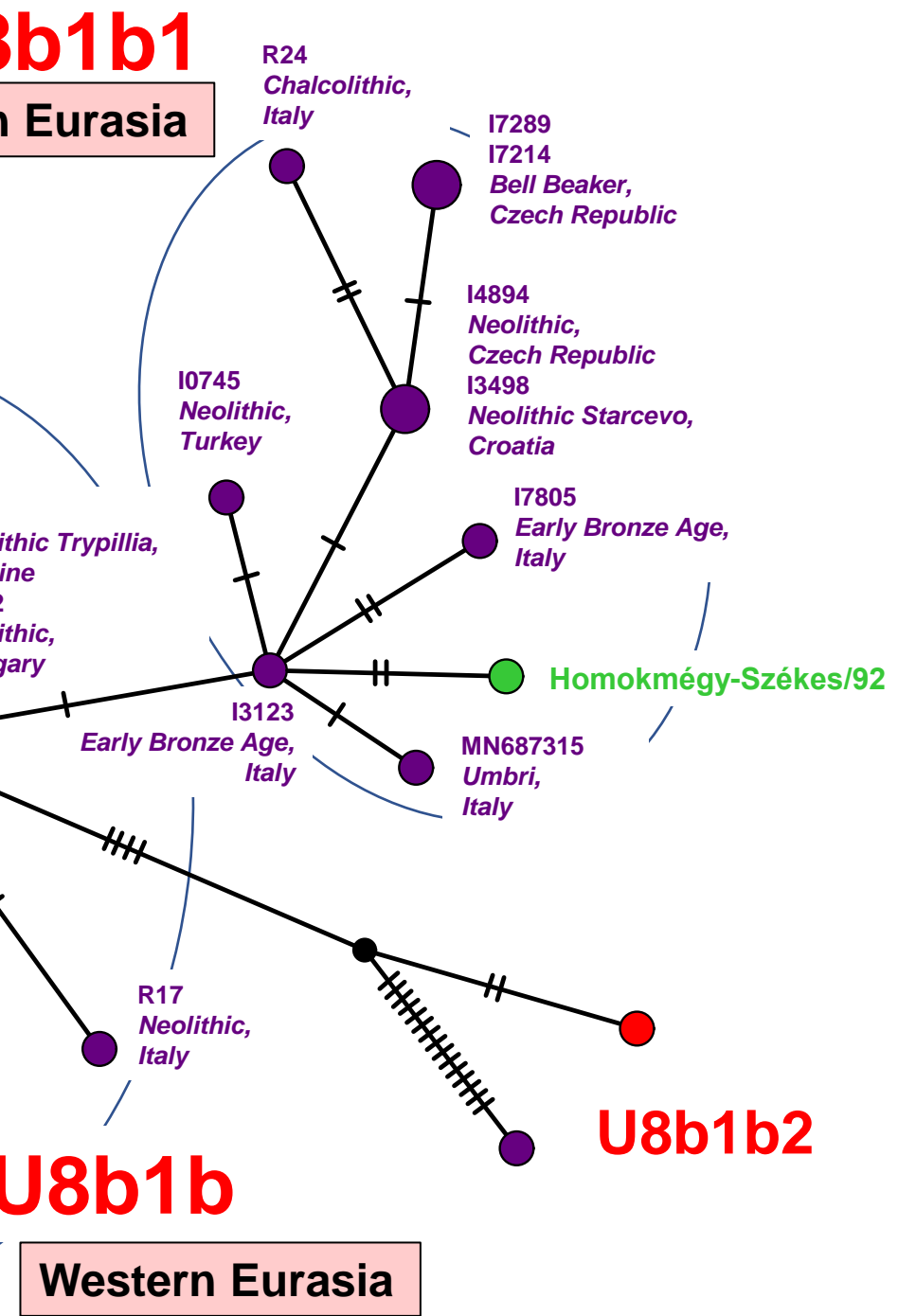
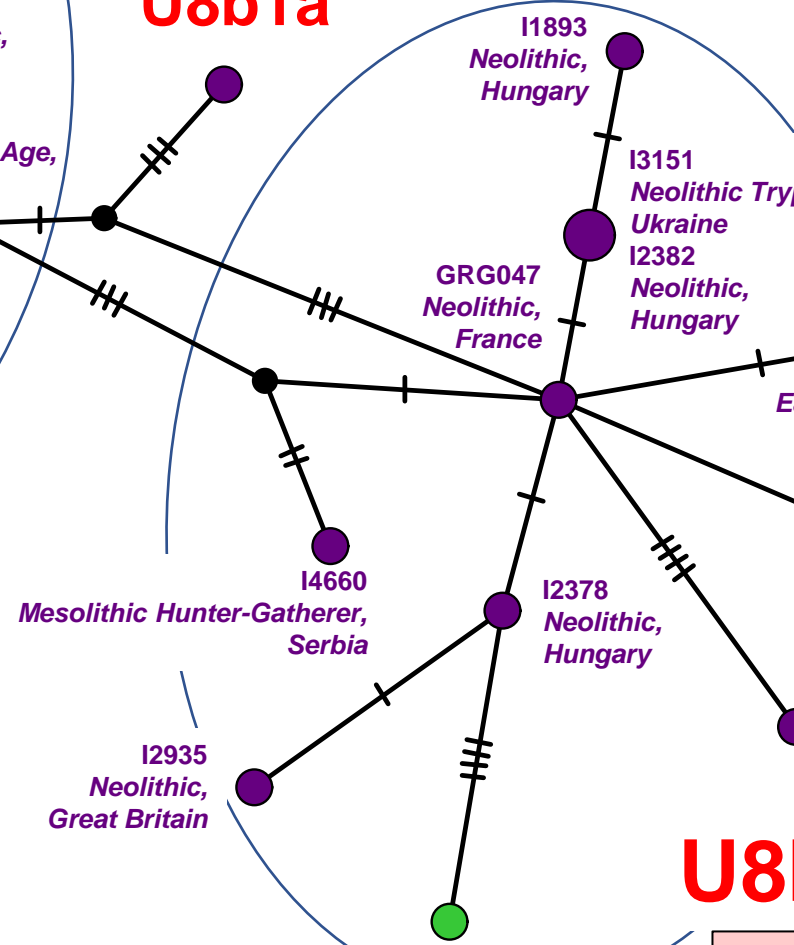
Eurasia

U8b1a1



U8b1b1  
Western Eurasia

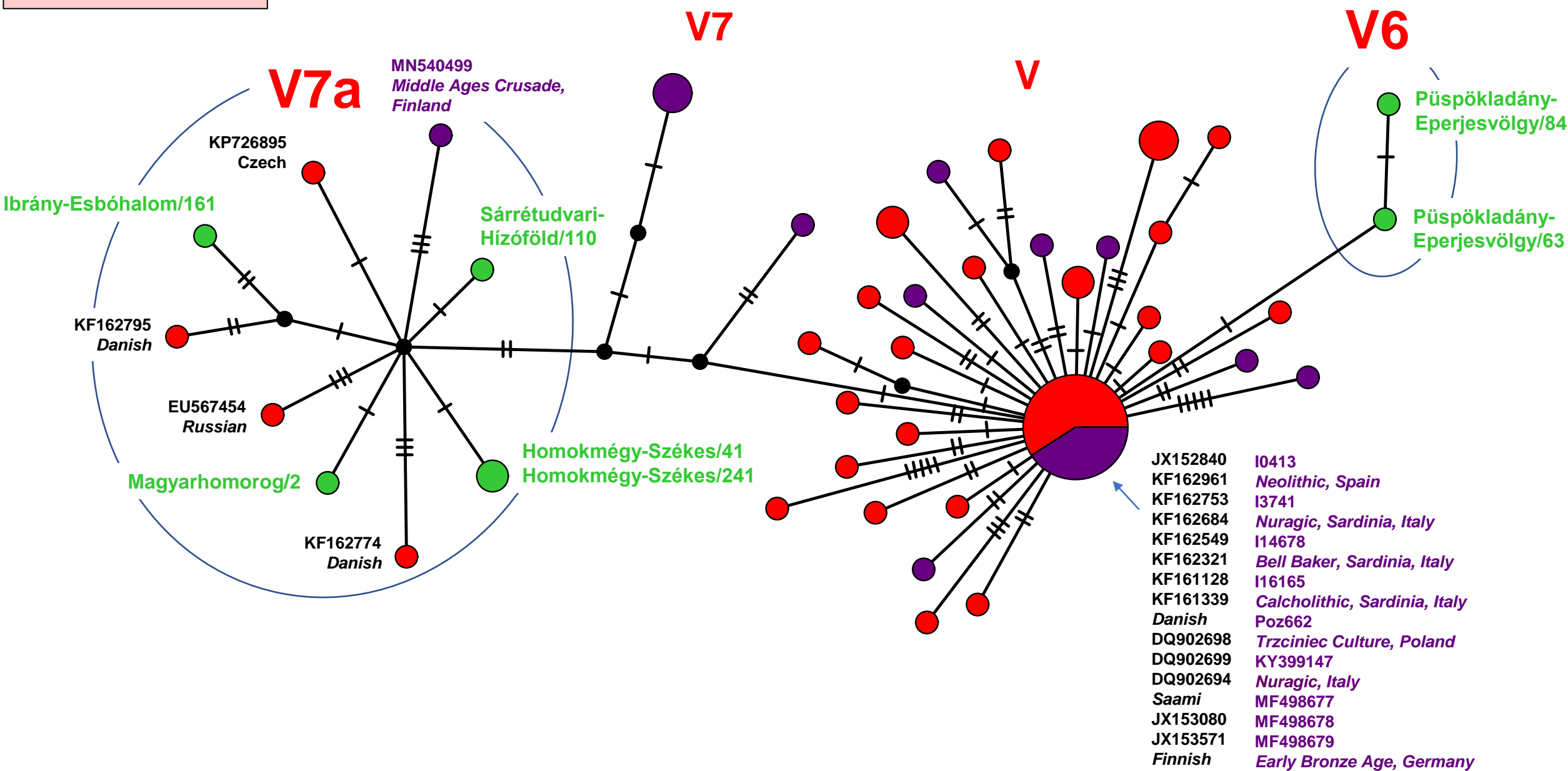
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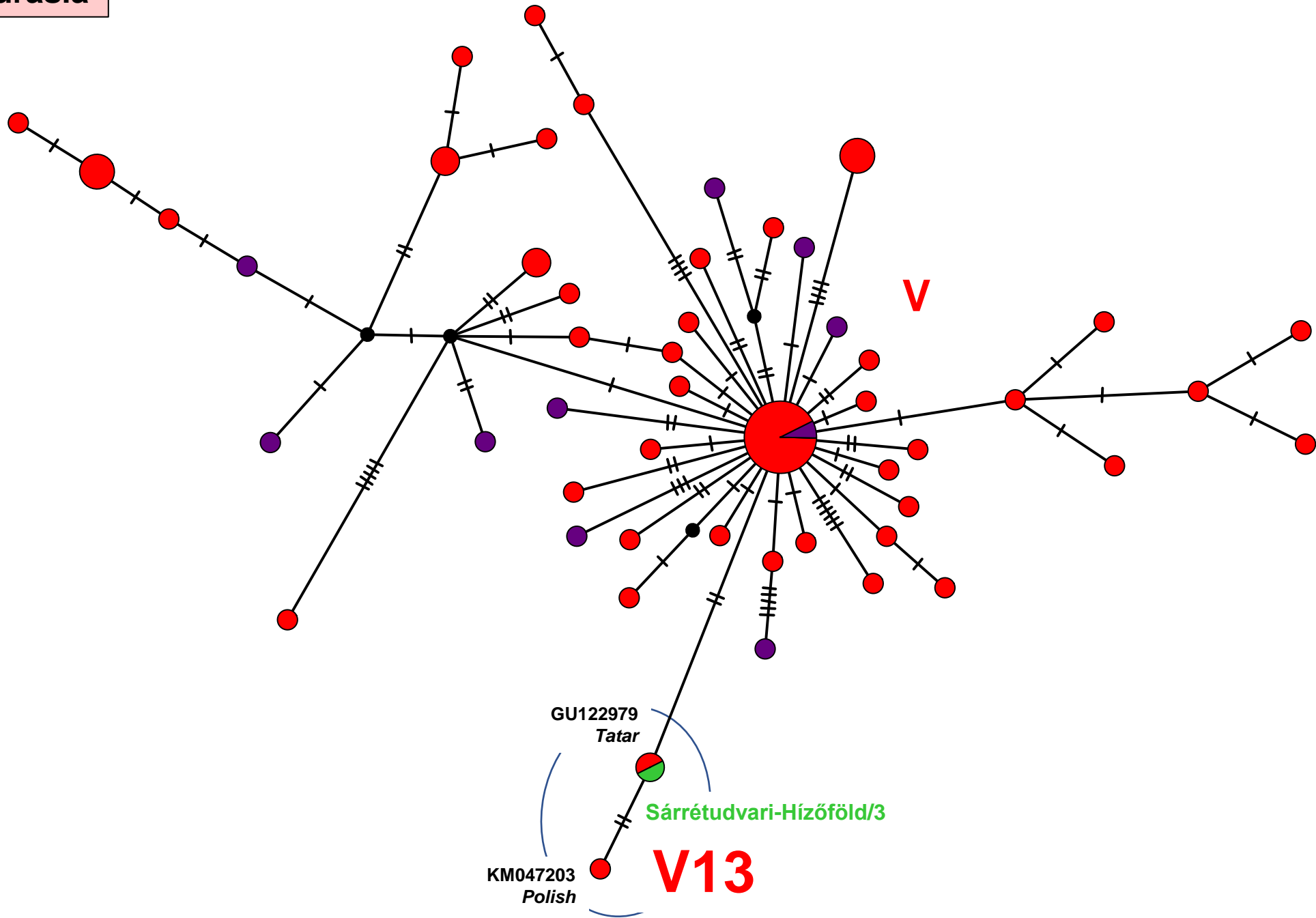
U8b1b  
Western Eurasia

Western Eurasia

Western Eurasia



Western Eurasia





W3a1a1

W3a1a

W3a1

Eurasia

FJ472839  
Polish

HUN039  
Hungarian

Sárrétudvari-Hízőföld/197

MH176332  
Yamnaya,  
Ukraine

Poz675  
Trzciniec  
Culture,  
Poland

I12477  
Bronze Age,  
Pakistan

Sárrétudvari-Hízőföld/233

poz550  
Trzciniec  
Circle,  
Poland

Sárrétudvari-Hízőföld/199

I12457  
Bronze  
Age,  
Pakistan

I4087  
Chalcolithic,  
Turkmenistan

KF161326  
KF161724  
Danish

I7207  
Corded Ware Culture,  
Czech Republic

Western Eurasia

I0443  
Yamnaya,  
Russia

KF146275  
Italian

I7420  
Bronze Age,  
Uzbekistan

KF162985  
Danish

I4332  
Bronze Age,  
Croatia  
poz715  
Trzciniec Culture,  
Poland

I13219  
Late Bronze Age,  
Pakistan

I3772  
Late Bronze Age,  
Kazakhstan

KF146273  
Italian  
KF146276  
French

I3607  
Bell Beaker,  
Germany

GU122989  
Tatar

JQ245760  
Caucasian

KF450952  
Pakistani,  
Afghan

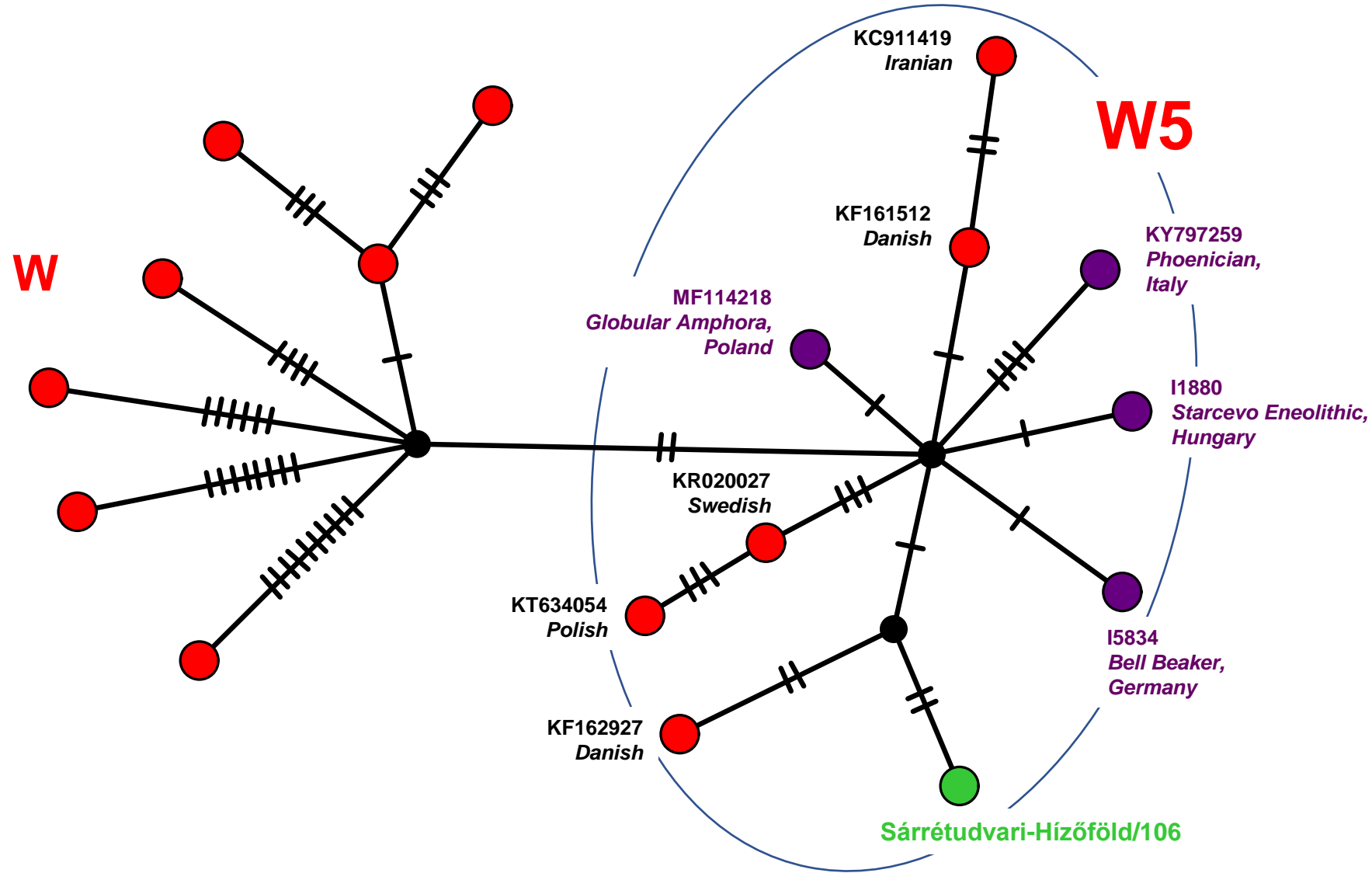
Sunghir6  
Middle Ages,  
Vladimir Oblast, Russia

I0116  
Unetice,  
Germany

SCY196  
Scythian,  
Moldova

W

Western Eurasia



## Caucasus/Middle East

X2

