

## SI Dataset for

# An updated chronology for the Miocene hominoid radiation in Western Eurasia

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## How to use this database

Here we provide a list of the localities included in this study in alphabetical order. Most of these localities are mentioned and discussed in the main text and appear in Figs. 1-2. In this appendix we provide further details regarding their location, age and correlation to regional and global time scales. For each record the information is arranged in eleven fields as follows:

*Locality*: Name of the locality. In case of synonymy the most widely used name is given in this field.

*Locality synonyms*: Other names given to the locality, usually referring to older names used by some authors.

*Area and country*: The formation, basin, area or region and the country the locality currently belongs to are given in this field and in this order.

*Taxon*: The hominoid taxon recovered in the locality. For details on the taxonomy and systematics used in this work see SI Appendix Text 1.

*Maximum age*: The oldest possible age of the locality. When magnetostratigraphic data are available, this refers to the lower boundary of the geomagnetic chron of the Geomagnetic Polarity Timescale (GPTS) to which the locality is correlated. When the locality is correlated to a regional/local zonation for which the boundaries for the different zones have not been unambiguously correlated to the GPTS, the term 'circa (ca.)' precedes the estimated age. In these cases, the estimated age will be the lower boundary of the regional/local zone to which the locality is correlated. And finally, when the correlation relies entirely on the MN zonation, the age of the lower boundary is given. For the Middle Miocene of Western Europe (France, Spain) the age of the MN boundaries is after Agustí et al. (2001), for the same time interval of Central Europe and Turkey the age of the MN boundaries follows Kálin & Kempf (2009). For the Late Miocene, the age of the MN boundaries is after Agustí et al. (2001). In case that two different maximum ages are possible (because of different possible correlations of the MN zones or the regional/local zones to the GPTS, for example) the two possible ages are given. When a question mark is added after the age means that the correlation is highly uncertain.

*Minimum age*: The youngest possible age of the locality. This age always refers to the top boundary of the geomagnetic chron, regional/local zonation or MN zone to which the locality is correlated (see above for more details).

*Preferred correlation to the GPTS*: The geomagnetic chron of the GPTS (Ogg & Smith, 2004) to which the locality is correlated.

*Local/regional correlations*: The regional/local zone to which the locality is correlated. These zones can be based either on marine, freshwater or continental faunas. For details on the different regional scales used see SI Appendix Text 2.

*Correlation to the MN zonation*: The MN zone to which the locality is correlated. For these MN zones which are known to have diachronic boundaries in Central Europe and Western Europe we indicate if we are considering the age boundaries of one area or the other one.

*Remarks:* Additional remarks usually give more details on the correlation of the locality to the different time scales. In a few situations, when the stratigraphic provenance of the material is uncertain, this issue is discussed in this field.

*References:* The references cited refer to the most recent references that add some information on the age of this locality. References to older works dealing with the same question can be found in those works.

## Locality Database

The following database includes 61 hominoid-bearing sites from the Miocene of Western Eurasia. Three doubtful citations are excluded from this synthesis: Montrejeau, Kalfa and Eldar. The 1911 geological map of Saint Gaudens reports the presence of *Dryopithecinae* indet. at Montrejeau (Haute-Garonne, France). Even though the material was never figured nor described, this citation is repeated by some authors (Szalay & Delson, 1979). However, no one knows what the material is or where it is stored (Mein, 1986). *Oreopithecus* sp. has been cited from Kalfa (Moldova) (Lungu, 1974), but the material has never been published and even its existence is uncertain (Delson, 1987). On the other hand, the presence of *Oreopithecus* in Moldova is highly unlikely, since this genus is known to be endemic to the Tusco-Sardinian palaeobioprovince. Szalay & Delson (1979) also mention the presence of *Dryopithecus fontani* at Eldar (Georgia), a locality close to Udabno 1. Nevertheless, this material has not been figured or described and it has not been mentioned in recent publications, so it is questionable if it ever existed.

*Locality:* Abocador de Can Mata, Barranc de Can Vila 1 (ACM/BCV1).

*Locality synonyms:* -

*Area and country:* Vallès-Penedès Basin, Catalonia, Spain.

*Taxon:* *Pierolapithecus catalaunicus*. Type locality.

*Maximum age:* 12.014 Ma.

*Minimum age:* 11.614 Ma.

*Preferred correlation to the GPTS:* C5r.3r.

*Local/regional correlations:* *Democricetodon larteti* + *Megacricetodon ibericus*  
Concurrent range zone of the Vallès-Penedès Basin.

*Correlation to the MN zonation:* MN 7+8 (Western Europe boundaries).

*Remarks:* Estimated age 11.93 Ma. This age is estimated from linear interpolation between bounding magnetic reversals of the local magnetostratigraphy of the ACM section.

*References:* Casanovas-Vilar et al., 2008; Moyà-Solà et al., 2009a; this work [Text S3].

*Locality:* Abocador de Can Mata, Barranc de Can Vila 4 (ACM/BCV4).

*Locality synonyms:* -

*Area and country:* Vallès-Penedès Basin, Catalonia, Spain.

*Taxon:* Hominidae indet.

*Maximum age:* 12.014 Ma.

*Minimum age:* 11.614 Ma.

*Preferred correlation to the GPTS:* C5r.3r.

*Local/regional correlations:* The correlation to the Vallès-Penedès zones is ambiguous.

*Correlation to the MN zonation:* MN 7+8 (Western Europe boundaries).

*Remarks:* Estimated age 11.91 Ma. This age is estimated from linear interpolation between bounding magnetic reversals of the local magnetostratigraphy of the ACM section.

*References:* This work [SI Appendix Text 3].

*Locality:* Abocador de Can Mata, locality C1-E\* (ACM/C1-E\*).

*Locality synonyms:* -

*Area and country:* Vallès-Penedès Basin, Catalonia, Spain.

*Taxon:* Hominidae indet.

*Maximum age:* 12.415 Ma.

*Minimum age:* 12.207 Ma.

*Preferred correlation to the GPTS:* C5An.2n.

*Local/regional correlations:* *Democricetodon larteti* + *Megacricetodon ibericus*  
Concurrent range zone of the Vallès-Penedès Basin.

*Correlation to the MN zonation:* MN 7+8 (Western Europe boundaries).

*Remarks:* Estimated age 12.2-12.3 Ma. This age is estimated from linear interpolation between bounding magnetic reversals of the local magnetostratigraphy of the ACM section.

*References:* This work [SI Appendix Text 3].

*Locality:* Abocador de Can Mata, locality C3-Ae (ACM/C3-Ae).

*Locality synonyms:* -

*Area and country:* Vallès-Penedès Basin, Catalonia, Spain.

*Taxon:* *Dryopithecus fontani*.

*Maximum age:* 12.014 Ma.

*Minimum age:* 11.614 Ma.

*Preferred correlation to the GPTS:* C5r.3r.

*Local/regional correlations:* The correlation to the Vallès-Penedès zones is ambiguous.

*Correlation to the MN zonation:* MN 7+8 (Western Europe boundaries).

*Remarks:* Estimated age 11.85 Ma. This age is estimated from linear interpolation between bounding magnetic reversals of the local magnetostratigraphy of the ACM section.

*References:* Moyà-Solà et al., 2009a; this work [SI Appendix Text 3].

*Locality:* Abocador de Can Mata, locality C3-Aj (ACM/C3-Aj).

*Locality synonyms:* -

*Area and country:* Vallès-Penedès Basin, Catalonia, Spain.

*Taxon:* *Anoiapithecus brevirostris*. Type locality.

*Maximum age:* 12.014 Ma.

*Minimum age:* 11.614 Ma.

*Preferred correlation to the GPTS:* C5r.3r.

*Local/regional correlations:* *Democricetodon larteti* + *Megacricetodon ibericus*  
Concurrent range zone of the Vallès-Penedès Basin.

*Correlation to the MN zonation:* MN 7+8 (Western Europe boundaries).

*Remarks:* Estimated age 11.94 Ma. This age is estimated from linear interpolation between bounding magnetic reversals of the local magnetostratigraphy of the ACM section.

*References:* Moyà-Solà et al., 2009b; this work [SI Appendix Text 3].

*Locality:* Abocador de Can Mata, locality C3-Az (ACM/C3-Az).

*Locality synonyms:* -

*Area and country:* Vallès-Penedès Basin, Catalonia, Spain.

*Taxon:* cf. *Dryopithecus fontani*.

*Maximum age:* 12.014 Ma.

*Minimum age:* 11.614 Ma.

*Preferred correlation to the GPTS:* C5r.3r.

*Local/regional correlations:* The correlation to the Vallès-Penedès zones is ambiguous.

*Correlation to the MN zonation:* MN 7+8 (Western Europe boundaries).

*Remarks:* Estimated age 11.91 Ma. This age is estimated from linear interpolation between bounding magnetic reversals of the local magnetostratigraphy of the ACM section.

*References:* Moyà-Solà et al., 2009a; this work [SI Appendix Text 3].

*Locality:* Abocador de Can Mata, locality C4-Ap (ACM/C4-Ap).

*Locality synonyms:* -

*Area and country:* Vallès-Penedès Basin, Catalonia, Spain.

*Taxon:* Hominoidea indet.

*Maximum age:* 12.014 Ma.

*Minimum age:* 11.614 Ma.

*Preferred correlation to the GPTS:* C5r.3r.

*Local/regional correlations:* The correlation to the Vallès-Penedès zones is ambiguous.

*Correlation to the MN zonation:* MN 7+8 (Western Europe boundaries).

*Remarks:* Estimated age 11.85 Ma. This age is estimated from linear interpolation between bounding magnetic reversals of the local magnetostratigraphy of the ACM section.

*References:* This work [SI Appendix Text 3].

*Locality:* Abocador de Can Mata, locality C4-Cp (ACM/C4-Cp).

*Locality synonyms:* -

*Area and country:* Vallès-Penedès Basin, Catalonia, Spain.

*Taxon:* Hominoidea indet.

*Maximum age:* 12.014 Ma.

*Minimum age:* 11.614 Ma.

*Preferred correlation to the GPTS:* C5r.3r.

*Local/regional correlations:* *Democricetodon larteti* + *Megacricetodon ibericus* Concurrent range zone of the Vallès-Penedès Basin.

*Correlation to the MN zonation:* MN 7+8 (Western Europe boundaries).

*Remarks:* Estimated age 11.92 Ma. This age is estimated from linear interpolation between bounding magnetic reversals of the local magnetostratigraphy of the ACM section.

*References:* This work [SI Appendix Text 3].

*Locality:* Ahmatovska Formation.

*Locality synonyms:* -



*Area and country:* Chirpan district, Bulgaria.

*Taxon:* cf. *Ouranopithecus* sp.

*Maximum age:* 8.769? Ma.

*Minimum age:* 4.997? Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* -

*Correlation to the MN zonation:* MN11-MN13?

*Remarks:* The very preliminary data suggest a Turolian age for this locality.

*References:* Spassov & Geraads, 2008.

*Locality:* Baccinello *Cardium* horizon.

*Locality synonyms:* Baccinello F1 horizon.

*Area and country:* Baccinello-Cinigiano Basin, Tuscany, Italy.

*Taxon:* *Oreopithecus bambolii*.

*Maximum age:* 8.300/7.528 Ma.

*Minimum age:* 7.58/7.52 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* Upper portion of the Baccinello-Cinigiano basin lithostratigraphical unit B, equivalent to the V-1 mammal assemblage zone of the same basin.

*Correlation to the MN zonation:* MN12, the Tusco-Sardinian mammal zones have been correlated to the MN zonation (Engesser, 1989; Rook et al., 1996) and considered to be equivalent to the MN12 (V-1 zone) and to the MN12 and part of the MN13 (V-2 zone). The non-endemic assemblages V-0 and V-3 would correlate to the MN11 and to the MN13, respectively. However, it is unclear if V-1 faunas cover part of the MN11 as well or if V-2 faunas extend into the MN13. In this list the lower boundary for the MN12 is given as the maximum age for the V-1 localities, but somewhat older ages, closer to 8.5 Ma are equally likely.

*Remarks:* The locality is placed below a radiometrically-dated tuff layer that has given an age of 7.5±0.3 Ma (Rook et al., 2000).

*References:* Benvenuti et al., 1995; Rook et al., 2000.

*Locality:* Baccinello V-1.

*Locality synonyms:* -

*Area and country:* Baccinello-Cinigiano Basin, Tuscany, Italy.

*Taxon:* *Oreopithecus bambolii*.

*Maximum age:* 8.300/7.528 Ma.

*Minimum age:* 7.58/7.52 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* V-1 mammal assemblage zone of the Baccinello-Cinigiano Basin.

*Correlation to the MN zonation:* MN12, the Tusco-Sardinian mammal zones have been correlated to the MN zonation (Engesser, 1989; Rook et al., 1996) and considered to be equivalent to the MN12 (V-1 zone) and to the MN12 and part of the MN13 (V-2 zone). The non-endemic assemblages V-0 and V-3 would correlate to the MN11 and to the MN13, respectively. However, it is unclear if V-1 faunas cover part of the MN11 as well

or if V-2 faunas extend into the MN13. In this list the lower boundary for the MN12 is given as the maximum age for the V-1 localities, but somewhat older ages, closer to 8.5 Ma are equally likely.

*Remarks:* The locality occurs in coal seams underlying the lacustrine clays and marls that include the Baccinello *Cardium* horizon. Therefore, its age can be further constrained thanks to radiometric dating of a suprajacent tuff layer (see comments on locality Baccinello *Cardium* horizon).

*References:* Benvenuti et al., 1995; Rook et al., 1996; Rook et al., 2000.

*Locality:* Can Llobateres 1.

*Locality synonyms:* Can Llobateres.

*Area and country:* Vallès-Penedès Basin, Catalonia, Spain.

*Taxon:* *Hispanopithecus (Hispanopithecus) laietanus*.

*Maximum age:* 9.779 Ma.

*Minimum age:* 9.717 Ma.

*Preferred correlation to the GPTS:* C4Ar.3r.

*Local/regional correlations:* *Cricetulodon sabadellensis* Local range zone of the Vallès-Penedès Basin.

*Correlation to the MN zonation:* MN9.

*Remarks:* Estimated age 9.72 Ma. This age is estimated from linear interpolation between bounding magnetic reversals of the local magnetostratigraphy of Can Llobateres (Vallès Occidental) given in Garcés et al. (1996).

*References:* Agustí et al., 1996; Agustí et al., 1997; Garcés et al., 1996; this work [SI Appendix Text 3].

*Locality:* Can Llobateres 2.

*Locality synonyms:* -

*Area and country:* Vallès-Penedès Basin, Catalonia, Spain.

*Taxon:* *Hispanopithecus (Hispanopithecus) laietanus*.

*Maximum age:* 9.656 Ma.

*Minimum age:* 9.409 Ma.

*Preferred correlation to the GPTS:* C4Ar.2r.

*Local/regional correlations:* *Cricetulodon* + *Progonomys* Interval zone of the Vallès-Penedès Basin.

*Correlation to the MN zonation:* MN9.

*Remarks:* Estimated age 9.65 Ma. This age is estimated from linear interpolation between bounding magnetic reversals of the local magnetostratigraphy of Can Llobateres (Vallès Occidental) given in Garcés et al. (1996).

*References:* Agustí et al., 1996; Agustí et al., 1997; Garcés et al., 1996; this work [SI Appendix Text 3].

*Locality:* Can Mata 1.

*Locality synonyms:* Bretxa de Can Mata, Hostalets Superior, Hostalets de Pierola superior.

*Area and country:* Vallès-Penedès Basin, Catalonia, Spain.

*Taxon:* Hominidae indet.

*Maximum age:* 11.554 Ma.

*Minimum age:* 11.154 Ma.

*Preferred correlation to the GPTS:* C5r.2r.

*Local/regional correlations:* *Hipparion* s.l. + *Megacricetodon ibericus* Concurrent range zone of the Vallès-Penedès Basin.

*Correlation to the MN zonation:* MN9.

*Remarks:* Estimated age 11.20 Ma. This age is estimated by considering sedimentation rates computed from the local stratigraphic section of ACM.

*References:* Moyà-Solà et al., 2009a; this work [SI Appendix Text 3].

*Locality:* Can Poncic (this is the official current toponym, although it is rarely employed in the paleontological literature).

*Locality synonyms:* Can Ponsic, Can Ponsich.

*Area and country:* Vallès-Penedès Basin, Catalonia, Spain.

*Taxon:* *Hispanopithecus (Hispanopithecus) crusafonti*. Type locality.

*Maximum age:* ca. 10.4 Ma.

*Minimum age:* 9.987 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* *Cricetulodon hartenbergeri* Local range zone of the Vallès-Penedès Basin.

*Correlation to the MN zonation:* MN9.

*Remarks:* -

*References:* Agustí et al., 1997; this work [SI Appendix Text 3].

*Locality:* Can Vila.

*Locality synonyms:* Hostalets Inferior, Hostalets de Pierola inferior.

*Area and country:* Vallès-Penedès Basin, Catalonia, Spain.

*Taxon:* '*Sivapithecus*' *occidentalis* nomen dubium. Type locality.

*Maximum age:* ca. 12.5 Ma.

*Minimum age:* ca. 11.5 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* -

*Correlation to the MN zonation:* MN7+8 (Western Europe boundaries).

*Remarks:* The stratigraphic provenance of the material is uncertain given the sketchy description of the site provided in Villalta Comella & Crusafont Pairó (1941). The material was found in whitish clays (Villalta Comella & Crusafont Pairó, 1941) which presumably correspond to the lower part of the Hostalets de Pierola composite section (Moyà-Solà et al., 2009a) since the upper part is predominantly composed of red clays. The lower part of the Hostalets de Pierola composite section correlates to the *Democricetodon crusafonti* + *Megacricetodon ibericus* Concurrent range zone of the Vallès-Penedès Basin, which would yield an age range of 13/12.8 to 11.9 Ma for the Can Vila site. However, given the uncertainty in the location of the site, younger age cannot be discarded.

*References:* Moyà-Solà et al., 2004; this work [SI Appendix Text 3].

*Locality:* Çandır locality 3.

*Locality synonyms:* -.

*Area and country:* Çankiri Basin, Central Anatolia, Turkey.

*Taxon:* *Griphopithecus alpani*.

*Maximum age:* 14.095 Ma.

*Minimum age:* 13.369 Ma.

*Preferred correlation to the GPTS:* C5ACn/C5ABn

*Local/regional correlations:* The close locality Çandır 2 is correlated to rodent assemblage zone F of Anatolia.

*Correlation to the MN zonation:* MN6 (Central Europe boundaries).

*Remarks:* The alternative correlation to chron C5Cn, favored by Begun et al. (2003), requires the assumption of important stratigraphical hiatuses in the Çandır magnetostratigraphical section.

*References:* Begun et al., 2003; De Bruijn et al., 2003; Krijgsman, 2003.

*Locality:* Casteani.

*Locality synonyms:* -

*Area and country:* Baccinello-Cinigiano Basin, Tuscany, Italy.

*Taxon:* *Oreopithecus bambolii*.

*Maximum age:* 8.300/7.528 Ma.

*Minimum age:* 7.58/7.52 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* V-1 mammal assemblage zone of the Baccinello-Cinigiano Basin.

*Correlation to the MN zonation:* MN12, the Tusco-Sardinian mammal zones have been correlated to the MN zonation (Engesser, 1989; Rook et al., 1996) and considered to be equivalent to the MN12 (V-1 zone) and to the MN12 and part of the MN13 (V-2 zone). The non-endemic assemblages V-0 and V-3 would correlate to the MN11 and to the MN13, respectively. However, it is unclear if V-1 faunas cover part of the MN11 as well or if V-2 faunas extend into the MN13. In this list the lower boundary for the MN12 is given as the maximum age for the V-1 localities, but somewhat older ages, closer to 8.5 Ma are equally likely. The top boundary for the V-1 zone is determined on the basis of the radiometric dating of a tuff layer interbedded within the Baccinello-Cinigiano succession (Rook et al., 2000).

*Remarks:* This locality corresponds to a lignite mine which is considered to be equivalent to the coal seams of Baccinello V-1.

*References:* Azzaroli et al., 1986; Rook et al., 1996.

*Locality:* Castell de Barberà.

*Locality synonyms:* -

*Area and country:* Vallès-Penedès Basin, Catalonia, Spain.

*Taxon:* cf. *Dryopithecus fontani*.

*Maximum age:* 11.850 Ma.

*Minimum age:* 11.614/11.154 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations: Democricetodon crusafonti + Megacricetodon ibericus*  
Concurrent range zone of the Vallès-Penedès Basin.

*Correlation to the MN zonation:* MN 7+8 (Western Europe boundaries).

*Remarks:* -

*References:* Agustí et al., 1997; this work [SI Appendix Text 3].

*Locality:* Çorakyerler.

*Locality synonyms:* -

*Area and country:* Çankiri Basin, Central Anatolia, Turkey.

*Taxon:* *Ouranopithecus turkae*. Type locality.

*Maximum age:* 8.769 Ma.

*Minimum age:* 7.285/7.140 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* Rodent assemblage zone J of Anatolia.

*Correlation to the MN zonation:* MN 11-MN12.

*Remarks:* The rodent fauna suggests a correlation to either zones J or K, although a correlation to zone J (and therefore to MN11) is preferred by Ünay et al. (2006). The macromammal fauna points to an MN11 age as well, but includes certain ruminants that would indicate an MN12 age (*Pliocervus* sp., *Miotragocerus valenciennesi*, *Oioceros rothi*). Accordingly, a somewhat younger age (MN12) for *O. turkae* cannot be discarded.

*References:* Güleç et al., 2007; Ünay et al., 2006.

*Locality:* Ebingen.

*Locality synonyms:* -

*Area and country:* Swabian Alps, Baden-Württemberg, Germany.

*Taxon:* Hominidae indet.

*Maximum age:* ?

*Minimum age:* ?

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* -

*Correlation to the MN zonation:* ?

*Remarks:* This locality was discovered in the earliest 20<sup>th</sup> century and primate fossils are the only material recovered, so their age cannot be determined. Nevertheless, an 'indeterminate Vallesian age' has been assigned to this site without providing any argument (Mein, 1986).

*References:* Mein, 1986; this work.

*Locality:* Engelswies.

*Locality synonyms:* -

*Area and country:* Bavarian Molasse Basin, Baden-Württemberg, Germany.

*Taxon:* Hominoidea indet.

*Maximum age:* 16.543 Ma.

*Minimum age:* 15.974 Ma.

*Preferred correlation to the GPTS:* C5Cn.1r/C5Cn.2r.

*Local/regional correlations:* *Keramidomys* – *Megacricetodon bavaricus* Concurrent range zone of the Swiss Molasse Basin.

*Correlation to the MN zonation:* MN5 (Central Europe boundaries).

*Remarks:* -

*References:* Böhme et al., 2008; Heizmann & Begun, 2001; this work [see main text].

*Locality:* Eppelsheim.

*Locality synonyms:* -

*Area and country:* Dinotheriensande Formation, Rhenish Hesse, Germany.

*Taxon:* Hominoidea indet.

*Maximum age:* 11.614/11.154 Ma.

*Minimum age:* 9.717 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* -

*Correlation to the MN zonation:* MN9.

*Remarks:* The primate material has not been described or figured.

*References:* Franzen & Storch, 1999; Franzen et al., 2003.

*Locality:* Estació Depuradora d'Aigües Residuals del Riu Ripoll, locality 6 (EDAR6).

*Locality synonyms:* -

*Area and country:* Vallès-Penedès Basin, Catalonia, Spain.

*Taxon:* *Hispanopithecus (Hispanopithecus) laietanus*.

*Maximum age:* ca. 10.4 Ma.

*Minimum age:* 9.987 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* *Cricetulodon hartenbergeri* Local range zone of the Vallès-Penedès Basin.

*Correlation to the MN zonation:* MN9.

*Remarks:* -

*References:* Checa Soler & Rius Font, 2003; this work [SI Appendix Text 3].

*Locality:* Estació Depuradora d'Aigües Residuals del Riu Ripoll, locality 8 (EDAR8).

*Locality synonyms:* Estació Depuradora d'Aigües Residuals del Riu Ripoll, locality 13 (EDAR13).

*Area and country:* Vallès-Penedès Basin, Catalonia, Spain.

*Taxon:* *Hispanopithecus (Hispanopithecus) laietanus*.

*Maximum age:* ca. 10.4 Ma.

*Minimum age:* 9.987 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* *Cricetulodon hartenbergeri* Local range zone of the Vallès-Penedès Basin.

*Correlation to the MN zonation:* MN9.

*Remarks:* -

*References:* Checa Soler & Rius Font, 2003; this work [SI Appendix Text 3].

*Locality:* Fiume Santo.

*Locality synonyms:* -

*Area and country:* Sassari, Sardinia, Italy.

*Taxon:* *Oreopithecus bambolii*.

*Maximum age:* 7.58/7.52 Ma.

*Minimum age:* 7.285/7.140 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* V-2 mammal assemblage zone of the Baccinello-Cinigiano Basin.

*Correlation to the MN zonation:* MN12, the Tusco-Sardinian mammal zones have been correlated to the MN zonation (Engesser, 1989; Rook et al., 1996) and considered to be equivalent to the MN12 (V-1 zone) and to the MN12 and part of the MN13 (V-2 zone). The non-endemic assemblages V-0 and V-3 would correlate to the MN11 and to the MN13, respectively. However, it is unclear if V-1 faunas cover part of the MN11 as well or if V-2 faunas extend into the MN13. In this list the top boundary for the MN12 is given as the minimum age for the V-2 localities, but somewhat younger ages, closer to 6.5 Ma are equally likely. The lower boundary for the V-2 zone is determined on the basis of the radiometric dating of a tuff layer interbedded within the Baccinello-Cinigiano succession (Rook et al., 2000).

*Remarks:* -

*References:* Abbazzi et al., 2008; Casanovas-Vilar et al., in press.

*Locality:* Götzendorf.

*Locality synonyms:* -

*Area and country:* Vienna Basin, Lower Austria, Austria.

*Taxon:* cf. Hominoidea indet.

*Maximum age:* ca. 9.9 Ma.

*Minimum age:* ca. 9.7 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* Mollusc zone F2 (Pannonian) of the Vienna Basin.

*Correlation to the MN zonation:* MN9.

*Remarks:* -

*References:* Harzhauser et al., 2004; Nargolwalla et al., 2006.

*Locality:* Great Trasubbie outcrop.

*Locality synonyms:* Trasubbie.

*Area and country:* Baccinello-Cinigiano Basin, Tuscany, Italy.

*Taxon:* *Oreopithecus bambolii*.

*Maximum age:* 7.58/7.52 Ma.

*Minimum age:* 7.285/7.140 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* V-2 mammal assemblage zone of the Baccinello-Cinigiano Basin.

*Correlation to the MN zonation:* MN12, the Tusco-Sardinian mammal zones have been correlated to the MN zonation (Engesser, 1989; Rook et al., 1996) and considered to be equivalent to the MN12 (V-1 zone) and to the MN12 and part of the MN13 (V-2 zone).

The non-endemic assemblages V-0 and V-3 would correlate to the MN11 and to the MN13, respectively. However, it is unclear if V-1 faunas cover part of the MN11 as well or if V-2 faunas extend into the MN13. In this list the top boundary for the MN12 is given as the minimum age for the V-2 localities, but somewhat younger ages, closer to 6.5 Ma are equally likely. The lower boundary for the V-2 zone is determined on the basis of the radiometric dating of a tuff layer interbedded within the Baccinello-Cinigiano succession (Rook et al., 2000).

*Remarks:* -

*References:* Engesser, 1989; Rook et al., 1996.

*Locality:* Hostalets de Pierola.

*Locality synonyms:* -

*Area and country:* Vallès-Penedès Basin, Catalonia, Spain.

*Taxon:* Hominoidea indet.

*Maximum age:* ca. 12.5 Ma.

*Minimum age:* ca. 9.7 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* -

*Correlation to the MN zonation:* MN7+8-MN9 (Western Europe boundaries).

*Remarks:* The stratigraphic provenance of the material is unknown. Age ranges refer to the whole range of the Hostalets de Pierola composite section.

*References:* Van der Made & Ribot, 1999; this work [SI Appendix Text 3].

*Locality:* Klein Hadersdorf.

*Locality synonyms:* -

*Area and country:* Vienna Basin, Lower Austria, Austria.

*Taxon:* *Griphopithecus suessi*.

*Maximum age:* 11.614 Ma.

*Minimum age:* 11.118 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* MMi9/MMi13 planktonic foraminifera zones, MNN6/MNN7 calcareous nannoplankton zones.

*Correlation to the MN zonation:* MN7+8 (Central Europe boundaries).

*Remarks:* The locality is placed in the same transitional facies that Neudorf-Sandberg (Slovakia).

*References:* Rabeder & Steininger, 1975; Steininger, 1986.

*Locality:* La Grive Saint-Alban M.

*Locality synonyms:* La Grive M, La Grive.

*Area and country:* Isère, France.

*Taxon:* *Dryopithecus fontani*.

*Maximum age:* 13.015/12.765 Ma.

*Minimum age:* 11.850 Ma.

*Preferred correlation to the GPTS:* -



*Local/regional correlations: Democricetodon larteti + Megacricetodon ibericus*  
Concurrent range zone of the Vallès-Penedès Basin.

*Correlation to the MN zonation:* MN7+8 (Western Europe boundaries).

*Remarks:* The exact provenance of the hominoid specimen (an isolated upper incisor) is not surely known, and the attribution of the fossil to a particular fissure considers the presence of particular features (such as patinas or the color of the sediment) that allow a tentative assignment. This incisor was discovered in the old collections of the Museum of Basel (Andrews et al., 1996) and on the basis of the presence of a grey patina it was assigned to La Grive Saint Alban L3 as well (Mein, 1986). However, P. Mein (pers. com.) had not seen the specimen by that time, and nowadays, on the basis of the occurrence of a red (not grey) patina in the incisor considers that it cannot belong to fissure L3, since red patinas only occur in fissures M and Peyre et Beau. Recently, without providing any additional argument the material has been assigned to fissure M (Begun, 2002), which is somewhat older than L3. Further details on the provenance of the material can be known on the basis of the collecting year. L. Costeur (Museum of Basel, pers. com.) kindly provided the information written in the label of the specimen: 'La Grive Saint Alban -1905 – Ogiez'. This does not give further details on its provenance but tells us that the specimen was collected or donated to the Museum of Basel by Ogiez in 1905. The excavations at fissure Peyre et Beau concluded in 1894, when the fissure was emptied, so according to the excavation year and considering the occurrence of a red patina we tentatively assign this material to La Grive Saint-Alban M.

*References:* Mein & Ginsburg, 2002; this work.

*Locality:* La Grive Saint-Alban L3/La Grive Saint-Alban L5?

*Locality synonyms:* La Grive L3/La Grive L5.

*Area and country:* Isère, France.

*Taxon:* *Dryopithecus fontani*.

*Maximum age:* 11.850 Ma.

*Minimum age:* 11.614/11.154 Ma

*Preferred correlation to the GPTS:* -

*Local/regional correlations: Democricetodon crusafonti + Megacricetodon ibericus*  
Concurrent range zone of the Vallès-Penedès Basin.

*Correlation to the MN zonation:* MN7+8 (Western Europe boundaries).

*Remarks:* The exact provenance of the hominoid specimen (an isolated upper third molar) is not surely known, and the attribution of the fossil to a particular fissure considers the presence of particular features (such as patinas or the color of the sediment) that allow a tentative assignment. The upper third molar shows a grey patina that according to Mein (1986) would indicate that it belongs to La Grive Saint-Alban L3. However, Mein (pers. com.) considered that it could well belong to fissure L5. Both fissures are correlated to the *Democricetodon crusafonti + Megacricetodon ibericus* Concurrent range zone of the Vallès-Penedès Basin.

*References:* Mein & Ginsburg, 2002; this work.

*Locality:* La Tarumba 1.

*Locality synonyms:* -

*Area and country:* Vallès-Penedès Basin, Catalonia, Spain.

*Taxon:* *Hispanopithecus (Hispanopithecus) laietanus*. Type locality.

*Maximum age:* 9.656 Ma.

*Minimum age:* 9.409 Ma.

*Preferred correlation to the GPTS:* C4Ar.2r.

*Local/regional correlations:* *Cricetulodon* + *Progonomys* Interval zone of the Vallès-Penedès Basin.

*Correlation to the MN zonation:* MN9.

*Remarks:* Estimated age 9.50 Ma. This age is estimated from linear interpolation between bounding magnetic reversals of the local magnetostratigraphy of La Tarumba (Vallès Occidental) given in Garcés et al. (1996).

*References:* Garcés et al., 1996; Agustí et al., 1997; this work [SI Appendix Text 3].

*Locality:* Lower Sinap Member (unknown locality).

*Locality synonyms:* -

*Area and country:* Sinap Formation, Central Anatolia, Turkey.

*Taxon:* Hominoidea indet.

*Maximum age:* ca. 14.8 Ma.

*Minimum age:* ca. 11.1 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* -

*Correlation to the MN zonation:* MN6-MN7+8 (Central Europe boundaries).

*Remarks:* The exact provenance of the material is unknown. This site has been correlated to Inönü, another Sinap locality with an estimated age of 15 Ma (Kappelman et al., 2003a). Such correlation is based on the presence of the suid *Listriodon splendens* associated to the primate find. *L. splendens* is only recorded at Inönü in the whole Sinap series, but this taxon has a very long range, from MN6 to MN9, so it does not provide any additional information. The age range provided here takes into account the whole temporal range of the Lower Sinap Member.

*References:* Kappelman et al., 2003a.

*Locality:* Mariathal.

*Locality synonyms:* -

*Area and country:* Molasse Basin, Lower Austria, Austria.

*Taxon:* Hominidae indet.

*Maximum age:* ca. 11.2 Ma.

*Minimum age:* ca. 10.4 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* Mollusc zone C/D (Pannonian) of the Vienna Basin.

*Correlation to the MN zonation:* MN9.

*Remarks:* -

*References:* Nargolwalla et al., 2006; Steininger, 1986.

*Locality:* Melchingen.

*Locality synonyms:* -

*Area and country:* Swabian Alps, Baden-Württemberg, Germany.

*Taxon:* Hominidae indet.

*Maximum age:* 11.614/11.154 Ma.

*Minimum age:* 8.300/7.528 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* -

*Correlation to the MN zonation:* MN9-MN11.

*Remarks:* The locality is a carstic filling which includes a fauna mixing Vallesian and early Turolian elements. This site has been to the MN9 without providing further arguments (Mein, 1986).

*References:* Mein, 1986.

*Locality:* Monte Bamboli.

*Locality synonyms:* -

*Area and country:* Monte Bamboli Basin, Tuscany, Italy.

*Taxon:* *Oreopithecus bambolii*. Type locality.

*Maximum age:* 7.58/7.52 Ma.

*Minimum age:* 7.285/7.140 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* V-2 mammal assemblage zone of the Baccinello-Cinigiano Basin.

*Correlation to the MN zonation:* MN12, the Tusco-Sardinian mammal zones have been correlated to the MN zonation (Engesser, 1989; Rook et al., 1996) and considered to be equivalent to the MN12 (V-1 zone) and to the MN12 and part of the MN13 (V-2 zone). The non-endemic assemblages V-0 and V-3 would correlate to the MN11 and to the MN13, respectively. However, it is unclear if V-1 faunas cover part of the MN11 as well or if V-2 faunas extend into the MN13. In this list the top boundary for the MN12 is given as the minimum age for the V-2 localities, but somewhat younger ages, closer to 6.5 Ma are equally likely. The lower boundary for the V-2 zone is determined on the basis of the radiometric dating of a tuff layer interbedded within the Baccinello-Cinigiano succession (Rook et al., 2000).

*Remarks:* The exact stratigraphic provenance of the fossils is unknown and because many lignite layers occur in the sequence of Monte Bamboli it is not unlikely that the fossils come from different layers. However, the fauna recovered fully agrees with a correlation to V-2 zone.

*References:* Engesser, 1989; Rook et al., 1996.

*Locality:* Montemassi.

*Locality synonyms:* -

*Area and country:* Baccinello-Cinigiano Basin, Tuscany, Italy.

*Taxon:* *Oreopithecus bambolii*.

*Maximum age:* 8.300/7.528 Ma.

*Minimum age:* 7.58/7.52 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* V-1 mammal assemblage zone of the Baccinello-Cinigiano Basin.

*Correlation to the MN zonation:* MN12, the Tusco-Sardinian mammal zones have been correlated to the MN zonation (Engesser, 1989; Rook et al., 1996) and considered to be equivalent to the MN12 (V-1 zone) and to the MN12 and part of the MN13 (V-2 zone). The non-endemic assemblages V-0 and V-3 would correlate to the MN11 and to the MN13, respectively. However, it is unclear if V-1 faunas cover part of the MN11 as well or if V-2 faunas extend into the MN13. In this list the lower boundary for the MN12 is given as the maximum age for the V-1 localities, but somewhat older ages, closer to 8.5 Ma are equally likely.

*Remarks:* This locality corresponds to a lignite mine which is considered to be equivalent to the coal seams of Baccinello V-1.

*References:* Azzaroli et al., 1986; Rook et al., 1996.

*Locality:* Nikiti 1.

*Locality synonyms:* -

*Area and country:* Chalkidiki Peninsula, Macedonia, Greece.

*Taxon:* *Ouranopithecus macedoniensis*.

*Maximum age:* ca. 9.717 Ma.

*Minimum age:* ca. 8.769 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* -

*Correlation to the MN zonation:* MN10.

*Remarks:* The occurrence of some Turolian faunal elements may indicate an age closer to MN11.

*References:* Koufos, 2006.

*Locality:* Paşalar.

*Locality synonyms:* -

*Area and country:* Gönen Basin, Anatolia, Turkey.

*Taxon:* *Griphopithecus alpani*.

*Maximum age:* 14.877 Ma.

*Minimum age:* 13.734 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* Rodent assemblage zone F of Anatolia.

*Correlation to the MN zonation:* MN6 (Central Europe boundaries).

*Remarks:* The macromammal fauna suggests that Paşalar is close in age to Çandır but slightly older (Bernor & Tobien, 1990).

*References:* Bernor & Tobien, 1990; Pélaez-Campomanes & Daams, 2002; Ünay et al., 2003.

*Locality:* Paşalar gray sand unit.

*Locality synonyms:* -

*Area and country:* Gönen Basin, Anatolia, Turkey.

*Taxon:* *Kenyapithecus kizili*. Type locality.

*Maximum age:* 14.877 Ma.

*Minimum age:* 13.734 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* Rodent assemblage zone F of Anatolia.

*Correlation to the MN zonation:* MN6 (Central Europe boundaries).

*Remarks:* The macromammal fauna suggests that Paşalar is close in age to Çandır but slightly older (Bernor & Tobien, 1990).

*References:* Bernor & Tobien, 1990; Pélaez-Campomanes & Daams, 2002; Ünay et al., 2003.

*Locality:* Podere la Crocina.

*Locality synonyms:* La Crocina, Podere Santa Croce, Baccinello V-2.

*Area and country:* Baccinello-Cinigiano Basin, Tuscany, Italy.

*Taxon:* *Oreopithecus bambolii*.

*Maximum age:* 7.58/7.52 Ma.

*Minimum age:* 7.285/7.140 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* V-2 mammal assemblage zone of the Baccinello-Cinigiano Basin.

*Correlation to the MN zonation:* MN12, the Tusco-Sardinian mammal zones have been correlated to the MN zonation (Engesser, 1989; Rook et al., 1996) and considered to be equivalent to the MN12 (V-1 zone) and to the MN12 and part of the MN13 (V-2 zone). The non-endemic assemblages V-0 and V-3 would correlate to the MN11 and to the MN13, respectively. However, it is unclear if V-1 faunas cover part of the MN11 as well or if V-2 faunas extend into the MN13. In this list the top boundary for the MN12 is given as the minimum age for the V-2 localities, but somewhat younger ages, closer to 6.5 Ma are equally likely. The lower boundary for the V-2 zone is determined on the basis of the radiometric dating of a tuff layer interbedded within the Baccinello-Cinigiano succession (Rook et al., 2000).

*Remarks:* The locality is placed above a radiometrically-dated tuff layer that has given an age of  $7.5 \pm 0.3$  Ma (Rook et al., 2000).

*References:* Benvenuti et al., 1995; Rook et al., 1996; Rook et al., 2000.

*Locality:* Polinyà 2.

*Locality synonyms:* -

*Area and country:* Vallès-Penedès Basin, Catalonia, Spain.

*Taxon:* *Hispanopithecus (Hispanopithecus) laietanus*.

*Maximum age:* 11.614/11.154 Ma.

*Minimum age:* 9.717 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* -

*Correlation to the MN zonation:* MN9.

*Remarks:* -

*References:* Crusafont & Golpe-Posse, 1972.

*Locality:* Pyrgos Vassilissis.

*Locality synonyms:* Pyrgos Tour la Reine.

*Area and country:* Attica, Greece.

*Taxon:* *Graecopithecus freybergi* nomen vanum. Type locality.

*Maximum age:* 8.769? Ma.

*Minimum age:* 7.285/7.140? Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* -

*Correlation to the MN zonation:* MN11-MN12.

*Remarks:* The mammal fauna is quite fragmentary, however the presence of some Turolian macromammal taxa (*Tragoportax amalthea*, *Gazella deperdita*) may indicate an MN11-MN12 age.

*References:* Koufos, 2006.

*Locality:* Ravin de la Pluie.

*Locality synonyms:* -

*Area and country:* Axios Valley, Macedonia, Greece.

*Taxon:* *Ouranopithecus macedoniensis*. Type locality.

*Maximum age:* 9.409 Ma.

*Minimum age:* 9.312 Ma.

*Preferred correlation to the GPTS:* C4Ar.1n.

*Local/regional correlations:* -

*Correlation to the MN zonation:* MN10.

*Remarks:* The magnetostratigraphic sections of the Axios Valley are very short, so the correlation to the GPTS has to be taken with some caution.

*References:* Koufos, 2006; Sen et al., 2000.

*Locality:* Ribolla.

*Locality synonyms:* -

*Area and country:* Baccinello-Cinigiano Basin, Tuscany, Italy.

*Taxon:* *Oreopithecus bambolii*.

*Maximum age:* 8.300/7.528 Ma.

*Minimum age:* 7.58/7.52 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* V-1 mammal assemblage zone of the Baccinello-Cinigiano Basin.

*Correlation to the MN zonation:* MN12, the Tusco-Sardinian mammal zones have been correlated to the MN zonation (Engesser, 1989; Rook et al., 1996) and considered to be equivalent to the MN12 (V-1 zone) and to the MN12 and part of the MN13 (V-2 zone). The non-endemic assemblages V-0 and V-3 would correlate to the MN11 and to the MN13, respectively. However, it is unclear if V-1 faunas cover part of the MN11 as well or if V-2 faunas extend into the MN13. In this list the lower boundary for the MN12 is given as the maximum age for the V-1 localities, but somewhat older ages, closer to 8.5 Ma are equally likely.

*Remarks:* This locality corresponds to a lignite mine which is considered to be equivalent to the coal seams of Baccinello V-1.

*References:* Azzaroli et al., 1986; Rook et al., 1996.

*Locality:* Rudabánya 2.

*Locality synonyms:* -

*Area and country:* Pannonian Basin, NE Hungary.

*Taxon:* *Hispanopithecus (Rudapithecus) hungaricus*. Type locality.

*Maximum age:* ca. 11.5 Ma.

*Minimum age:* 9.717 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* -

*Correlation to the MN zonation:* MN9.

*Remarks:* Constraints on the maximum age of the site are provided by a distantly underlying tuff layer that has been radiometrically dated at ca. 11.5 Ma (Balogh, 1984). This tuff layer does not occur in the same section but can be easily correlated to the Rudabánya 2 section by the means of lithostratigraphy. The occurrence of *Hippotherium intrans*, may indicate that this locality is closer to 10-9.7 Ma (Bernor et al., 2003, 2004).

*References:* Bernor et al., 2003, 2004.

*Locality:* Saint Gaudens.

*Locality synonyms:* -

*Area and country:* Haute-Garonne, France.

*Taxon:* *Dryopithecus fontani*. Type locality.

*Maximum age:* 13.015/12.765 Ma.

*Minimum age:* 11.614/11.154 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* -

*Correlation to the MN zonation:* MN7+8 (Western Europe boundaries).

*Remarks:* -

*References:* Mein, 1986.

*Locality:* Salmendingen.

*Locality synonyms:* -

*Area and country:* Swabian Alps, Baden-Württemberg, Germany.

*Taxon:* *Neopithecus brancoi* nomen dubium. Type locality.

*Maximum age:* 11.614/11.154? Ma.

*Minimum age:* 8.300/7.528? Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* -

*Correlation to the MN zonation:* MN9-MN11.

*Remarks:* Mein (1986) remarks that the site includes mostly Vallesian taxa, but on basis of the presence of the beaver *Dipoides*, which is not recorded in Europe until the Turolian, assigns and MN11 age to this site. In our opinion Salmendingen may represent a mixed fauna as observed in other carstic sites of the Swabian Alps (Melchingen, Ebgingen, Trochtelfingen).

*References:* Mein, 1986; this work.

*Locality:* Sant Quirze.

*Locality synonyms:* Sant Quirze del Vallès, Sant Quirze de Galliners, Trinxera Ferrocarril Sant Quirze

*Area and country:* Vallès-Penedès Basin, Catalonia, Spain.

*Taxon:* Hominidae indet.

*Maximum age:* 11.850 Ma.

*Minimum age:* 11.614/11.154 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* *Democricetodon crusafonti* + *Megacricetodon ibericus*  
Concurrent range zone of the Vallès-Penedès Basin.

*Correlation to the MN zonation:* MN 7+8 (Western Europe boundaries).

*Remarks:* -

*References:* Agustí et al., 1997; this work [SI Appendix Text 3].

*Locality:* Santiga.

*Locality synonyms:* -

*Area and country:* Vallès-Penedès Basin, Catalonia, Spain.

*Taxon:* *Hispanopithecus (Hispanopithecus) laietanus*.

*Maximum age:* ca. 10.4 Ma.

*Minimum age:* 9.987 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* *Cricetulodon hartenbergeri* Local range zone of the Vallès-Penedès Basin.

*Correlation to the MN zonation:* MN9.

*Remarks:* -

*References:* this work [SI Appendix Text 3].

*Locality:* Serrazzano.

*Locality synonyms:* -

*Area and country:* Val di Cecina Basin, Tuscany, Italy.

*Taxon:* *Oreopithecus bambolii*.

*Maximum age:* 8.300/7.528 Ma.

*Minimum age:* 7.58/7.52 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* V-1 mammal assemblage zone of the Baccinello-Cinigiano Basin.

*Correlation to the MN zonation:* MN12, the Tusco-Sardinian mammal zones have been correlated to the MN zonation (Engesser, 1989; Rook et al., 1996) and considered to be equivalent to the MN12 (V-1 zone) and to the MN12 and part of the MN13 (V-2 zone). The non-endemic assemblages V-0 and V-3 would correlate to the MN11 and to the MN13, respectively. However, it is unclear if V-1 faunas cover part of the MN11 as well or if V-2 faunas extend into the MN13. In this list the lower boundary for the MN12 is given as the maximum age for the V-1 localities, but somewhat older ages, closer to 8.5 Ma are equally likely.

*Remarks:* This locality corresponds to a lignite mine which is considered to be equivalent to the coal seams of Baccinello V-1.



*References:* Azzaroli et al., 1986; Rook et al., 1996.

*Locality:* Sinap locality 8A.

*Locality synonyms:* -

*Area and country:* Sinap Formation, Central Anatolia, Turkey.

*Taxon:* *Ankarapithecus meteai*. Type locality.

*Maximum age:* 9.987 Ma.

*Minimum age:* 9.934 Ma.

*Preferred correlation to the GPTS:* C5n.1r

*Local/regional correlations:* Rodent assemblage zone I of Anatolia.

*Correlation to the MN zonation:* MN9.

*Remarks:* -

*References:* Kappelman et al., 2003a, 2003b; Ünay et al., 2003.

*Locality:* Sinap locality 12.

*Locality synonyms:* -

*Area and country:* Sinap Formation, Central Anatolia, Turkey.

*Taxon:* *Ankarapithecus meteai*.

*Maximum age:* 9.934 Ma.

*Minimum age:* 9.9717 Ma.

*Preferred correlation to the GPTS:* C5n.1n/C4Ar.2n.

*Local/regional correlations:* -

*Correlation to the MN zonation:* MN9/MN10.

*Remarks:* -

*References:* Kappelman et al., 2003a, 2003b.

*Locality:* St. Stefan im Lavanttal.

*Locality synonyms:* -

*Area and country:* Gratkorn Basin, Carinthia, Austria.

*Taxon:* *Dryopithecus fontani*.

*Maximum age:* ca. 12.2 Ma.

*Minimum age:* ca. 12 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* Upper *Ervilia* Zone (Late Sarmatian) of the terrestrial mollusks zones of the Styrian Basin.

*Correlation to the MN zonation:* MN7+8 (Central Europe boundaries).

*Remarks:* This is the type locality of *Dryopithecus fontani carinthiacus*, which is here synonymized with *Dryopithecus fontani* (see SI Appendix Text 1).

*References:* Daxner-Höck, 2010; Harzhauser et al., 2008.

*Locality:* Teuleria del Firal.

*Locality synonyms:* El Firal, Seu d'Urgell.

*Area and country:* Seu d'Urgell Basin, Catalonia, Spain.

*Taxon:* *Hispanopithecus (Hispanopithecus) crusafonti*.

*Maximum age:* ca. 10.4 Ma.

*Minimum age:* 9.987 Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* *Cricetulodon hartenbergeri* Local range zone of the Vallès-Penedès Basin.

*Correlation to the MN zonation:* MN9.

*Remarks:* This locality is included within the Ballestar lithostratigraphical unit. Even though Teuleria del Firal has not delivered micromammals two localities (Ballestar, Can Petit) of the Ballestar unit have provided a somewhat scarce micromammal fauna that allow a correlation to the *Cricetulodon hartenbergeri* Local range zone of the Vallès-Penedès Basin.

*References:* Agustí et al., 1979, 1984; this work [SI Appendix Text 3].

*Locality:* Trochtelfingen.

*Locality synonyms:* -

*Area and country:* Swabian Alps, Baden-Württemberg, Germany.

*Taxon:* Hominidae indet.

*Maximum age:* ?

*Minimum age:* ?

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* -

*Correlation to the MN zonation:* ?

*Remarks:* This locality was discovered in the 19<sup>th</sup> century and primate fossils are the only material recovered, so their age cannot be determined. Nevertheless, an 'indeterminate Vallesian age' has been assigned to this site without providing any argument (Mein, 1986).

*References:* Mein, 1986; this work.

*Locality:* Udabno 1.

*Locality synonyms:* -

*Area and country:* Shiraki Formation, Gare-Kaxheti, Georgia.

*Taxon:* ?*Udabnopithecus garedziensis*.

*Maximum age:* 9.098 Ma.

*Minimum age:* 8.769 Ma.

*Preferred correlation to the GPTS:* C4.An.

*Local/regional correlations:* Rodent assemblage zone I of Anatolia.

*Correlation to the MN zonation:* MN10.

*Remarks:* The primate find is reported from about 40 m above Udabno 1, which has a normal polarity and is clearly below Udabno 2 which has a reverse polarity and has been correlated to chron C4r.2r (Vangenheim et al., 1989; Sen, 1997). Accordingly, Udabno 1 would be correlated to chron C4.An, corresponding to the late Vallesian. The mammal fauna suggests a late Vallesian age (MN10) for the site (Gabunia et al., 2001) and agrees with this correlation.

*References:* Gabunia et al., 2001; Lordkipanitze et al., 2008; Sen, 1997; Vangenheim et al., 1989.

*Locality:* Wissberg.

*Locality synonyms:* -

*Area and country:* Dinotheriensande Formation, Rhenish Hesse, Germany.

*Taxon:* Hominidae indet.

*Maximum age:* 13.734? Ma.

*Minimum age:* 8.300/7.528? Ma.

*Preferred correlation to the GPTS:* -

*Local/regional correlations:* -

*Correlation to the MN zonation:* MN7+8-MN11? (Central Europe boundaries).

*Remarks:* The fauna represents a mixture of predominantly Vallesian taxa with Astaracian (*Prodeinotherium bavaricum*, *Anchitherium aurelianense*) and Turolian elements (cf. *Mesopithecus pentelicus*).

*References:* Franzen & Storch, 1999.

*Locality:* Xirochori 1.

*Locality synonyms:* -

*Area and country:* Axios Valley, Macedonia, Greece.

*Taxon:* *Ouranopithecus macedoniensis*.

*Maximum age:* 9.717 Ma.

*Minimum age:* 9.656 Ma.

*Preferred correlation to the GPTS:* C4Ar.2n.

*Local/regional correlations:* -

*Correlation to the MN zonation:* MN10.

*Remarks:* The magnetostratigraphical sections of the Axios Valley are very short, so the correlation to the GPTS has to be taken with some caution.

*References:* Koufos, 2006; Sen et al., 2000.

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