

# Biostratigraphical correlations between European charophytes and mammals from the Palaeocene to Middle Miocene: first results

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with 1 figure

## Historical review and generalities

**1. Mammals:** During the last decades, progress in mammal stratigraphy (especially of rodents) has been very important. The first European biozonations were published by THALER (1965 and 1972). A few years later, a consensus for a Neogene Mammal zonation was presented by MEIN (1975, 1979) who proposed the MN-zones (Mammal Neogene Zones). Recently, the Palaeogene zonation with MP-zones (Mammal Palaeogene Zones) has been published by SCHMIDT-KITTLER (1987).

**2. Charophytes:** The biostratigraphical validity of the Tertiary charophytes was demonstrated initially by GRAMBAST (1962, 1964, 1972), then by FEIST-CASTEL (CASTEL 1968, FEIST 1977), and finally by RIVELINE (1985), who published a general biozonation for the Palaeogene and Lower Miocene.

**3. Correlations:** Detailed correlations between mammals and charophytes have already been published, for example by ANADON & al. (1983), ANADON & FEIST (1981), BERGER (1983 & 1986), BERGER, CHAROLLAIS & HUGUENEY (1987), FEIST & RINGEADE (1977), MOJON & al. (1985), RIVELINE (1985).

## GEC working group on Tertiary biostratigraphy

During the First International Symposium on fossil and extant charophytes in Montpellier, 1989, several European charophytologists met to establish a valid European biozonation for the Tertiary, correlated with mammals.

In Paris, 1990, the annual meeting of the GEC (Group of European Charophytologists) was devoted to the theme "Tertiary charophyte zonation and correlation between mammals and charophytes". A detailed plan was proposed to present the results obtained from different basins, such as Loranca Basin (E. MORENO-EIRIS & J.J., JULIA), Belgian, English and Paris Basins (J. RIVELINE), South France and Ebro Basins (M. FEIST), the Mallorca Basin (C. MARTIN-CLOSAS), the Mainz Basin and Rhine Graben (J. SCHWARTZ), as well as from disseminated European Neogene localities (BERGER & SOULIE-MARSCHE) and from the molassic perialpine basin (J.-P. BERGER). For each basin we distinguish:

a) Direct charophyte-mammal correlation: from localities where charophytes and mammals have been found together in the same level.

b) Indirect charophyte-mammal correlation: from localities where charophytes and mammals do not occur in the same level, but could be reasonably attributed to the same age.

| CHAROPHYTE ZONES (23)      | MAMMAL ZONES (41)                         | STAGE     |
|----------------------------|---|-----------|
| ???                        | MN 8<br>MN 7<br>MN 6                      | MIOCENE   |
| GINSBURGI                  | MN5<br>MN4b<br>MN4a<br>MN3b<br>MN3a       |           |
| BERDOTENSIS                | MN2b                                      |           |
| NITIDA                     | MN2a<br>MN 1                              |           |
| NOTATA                     | MP 30<br>MP 29                            |           |
| UNGERI                     | MP 28<br>MP 27                            |           |
| MICROCERA                  | MP 26<br>MP 25<br>MP 24<br>MP 23<br>MP 22 |           |
| MAJOR                      | MP 21                                     |           |
| PINGUIS<br>TUBERCULATA     | -----Grande Coupure-----<br>MP 20         |           |
| VECTENSIS                  | MP 19                                     |           |
| VASIFORMIS-<br>TUBERCULATA | MP 18                                     | OLIGOCENE |
| TUBEROSA                   | ???                                       |           |
| REPANDA                    | MP 17                                     |           |
| VADASZI                    | MP 16                                     |           |
| FRITELI                    | ? MP 15                                   |           |
| PECKI                      | ? MP 14                                   |           |
| EMBERGERI                  | MP 13<br>?MP 12<br>?MP 11                 |           |
| THALERI                    | MP 10<br>MP 9<br>MP 8                     |           |
| PIVETAUI                   | ?MP 7                                     |           |
| DISERMAS                   | MP 6                                      |           |
| EDDA                       |   | PALEOC.   |
| VESTITA                    |   |           |
| BACILLARIS<br>CONCAVA      | ?MP 1-5                                   |           |

fig. 1: Preliminary correlation chart between European charophyte and mammal zonations

- c) Direct correlation between charophytes and marine faunas (foraminifera, nannoplankton, dinoflagellates)
- d) Indirect correlation between charophytes and marine faunas.

The publication of these results is planned for 1992.

The preliminary correlation chart presented here (fig. 1) is a compilation of the first results obtained from these investigations.

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