

seminario 25 giugno 2013

I macroforaminiferi del Paleogene:
classificazione, biostratigrafia e paleoecologia

ISPRA
SAPIENZA
UNIVERSITÀ DI ROMA

Lepidocycline e miogypsine

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Lepidocyclinids

N. morgani
N. praemarginata
N. tournoueri
Eulepidina

Fig. 76. European Lepidocyclinid Embryonic-sequence types of the *Neobulimina* lineage with their 19th to 18th stages of *L. praemarginata*, *L. morgani* and *L. tournoueri* (in all scales 50 µm; after De Molle, 1975). Lower row shows early stages of *Eulepidina* individuals with different embryonic infrastructures, × 70 scale = 50 µm (original, vertical frame).

Drooger (1993)

Nephrolepidina: biometry

PAC AAC II

D II
D I
b

Drooger (1993)

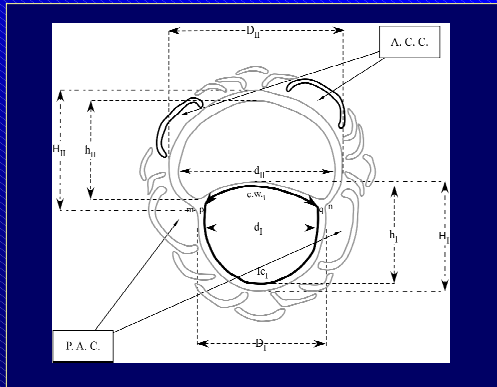
$A =$ length of the common wall between protoconch and deuteroconch (a) divided by the length of the whole deuteroconch of the protoconch (b) (Drooger 1993)

B (not used anymore) = ratio between the sum of all embryonic arc lengths (b) underlying the auxiliary chambers (PAC, AAC II and AAC I) and the length of the circumference of the entire nucleocoel.

$C =$ number of AAC II

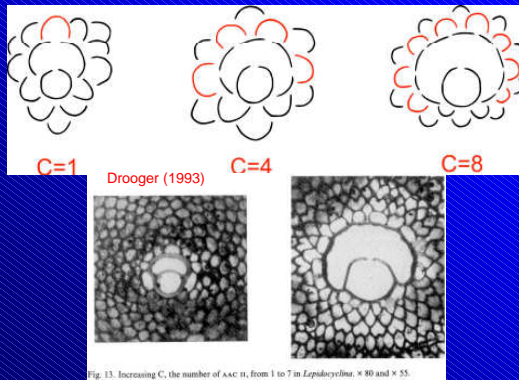
PAC = principal auxiliary chambers
AAC II = auxiliary chambers (on the outer wall of the deuteroconch, directly communicating with it)
AAC I = adauxiliary chambers (on the outer wall of the protoconch, directly communicating with it)

Nephrolepidina: more biometry

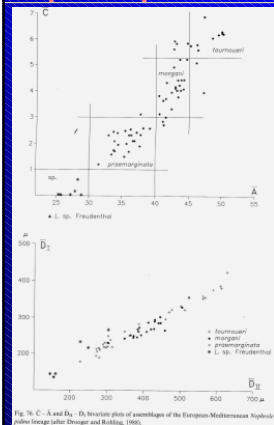


Courtesy A. Benedetti

Nephrolepidina: biometry



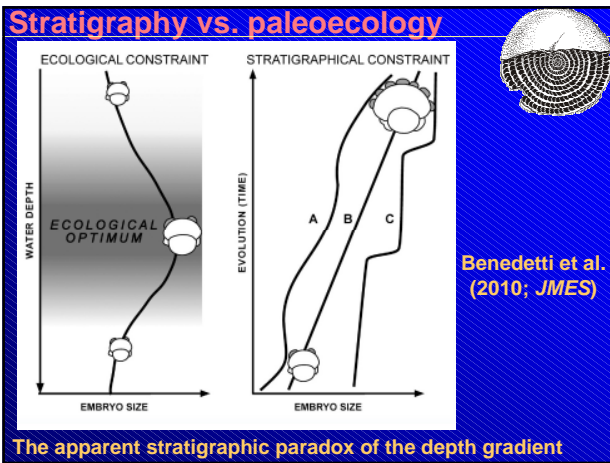
Nephrolepidina: biometry



Lepidocyclina (Nephrolepidina) tournoueri $C > 5.25$ $A > 45$
Lepidocyclina (Nephrolepidina) morgani $3 < C < 5.25$ $40 < A < 45$
Lepidocyclina (Nephrolepidina) praemarginata $(1) < C < 3$ $(35) < A < 40$

N. praemarginata is characteristic for the late Rupelian to early Chattian SBZ 22 zone.
N. morgani spans from the Chattian to the early Burdigalian (SBZ 22B to the early part of SBZ 25).
N. tournoueri spans from the latest Aquitanian to the whole Burdigalian (late SBZ 24 and SBZ 25).

(Drooger, 1993)



Miogypsinella

Contrary to common belief, *Miogypsinoides* does not occur in the Western Neotethys, Europe, and the Americas: these thin-walled Chattian-Miocene forms should be called *Miogypsinella*.

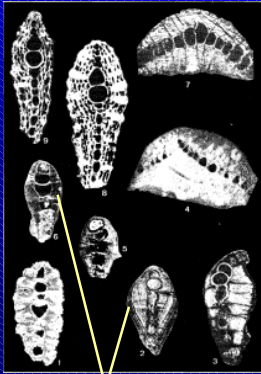
Miogypsinella (= *Miogypsinoides* Auctt.)

Miogypsinella

Late Chattian, Malatya, Turkey

Miogypsinella akcadagensis (Gedik & Sirel, 2009)

Raju (1973): Indian miogypsinids



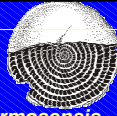
1 - *Miogypsinoides formosensis*
Yabe & Hanzawa

2-4 - *Miogypsinoides dehaartii*
Van der Vlerk. (4, microspheric
form subconical)

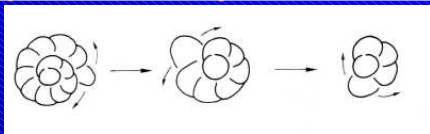
5-7: *Miogypsinoides indicus*
Raju, (7, conical form)

8, 9: *Lepidosemicyclina
excentrica* (Tan Sin Hok)

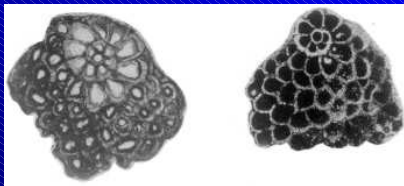
lamellar side walls in "true" *Miogypsinoides*



Miogypsinid biometry: Y value



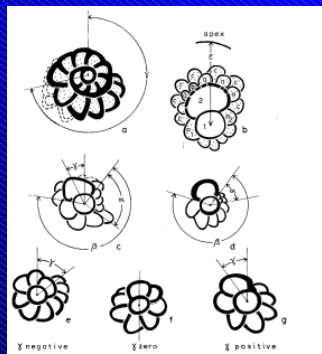
Shortening of the ancestral spiral from Y=12 to Y=4



Shortening of the ancestral spiral from Y=13 to Y=9

Y = the number of operculinid single-stolon chambers
X = the number of operculinid single-stolon chambers excluding the two embryonic chambers

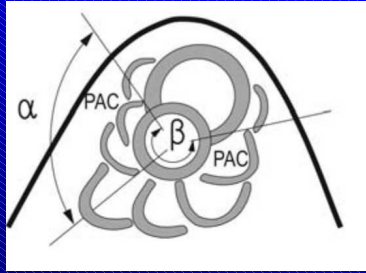
Miogypsinid biometry: α , β , γ



Schematic drawings of median sections of the embryonic - neptonic stages of *Miogypsinidae*, illustrating the derivation of α , β , γ and ϵ . 1 = protoconch, 2 = deuteroconch; 1 and 2 constitute the embryonic stage; chambers around the embryonic stage (dotted in fig. a, b) constitute the neptonic stage. P1 = first principal auxiliary chamber, P2 = second principal auxiliary chamber; a = accessory auxiliary chamber, c = closing chamber.

Raju (1973; Utrecht
Micropaleontol. Bull.
9: 1-145.)

Miogypsinid biometry: V value

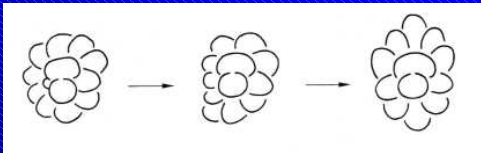


Özcan et al. (2009)

Miogypsinid with two principal auxiliary chamberlets (PAC)

$$V = 200 \times \alpha/\beta$$

Miogypsinid biometry: V value



Gaining symmetry of the protoconch neponic spirals from a V value of about 20 to perfect symmetry with V=100

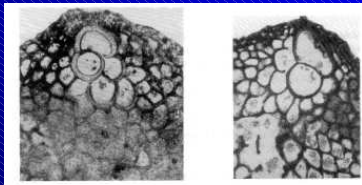
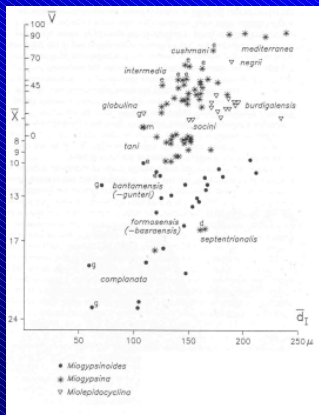


Fig. 12. Gaining symmetry of the protoconch neponic spirals in *Miogypsina*. $\times 70$ and $\times 50$.

Miogypsinid biometry



Relation between mean protoconch diameter \bar{d}_t and the values of the X - Y scale from the Mediterranean province, Europe and Africa

Drooger & Raju (1973)
