

# A sinistral *Vallonia pulchella* (O.F. Müller, 1774) shell from a Hungarian Quaternary deposit (Gastropoda, Valloniidae)

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A sinistral (reversed-coiled) specimen of *Vallonia pulchella* is recorded from a Quaternary deposit near Serényfalva, Hungary. Although *Vallonia* specimens of the exclusively dextral genus *Vallonia* are encountered in large quantities, both Recent and fossil, this seems to be first reliable record of a sinistral specimen.

Key words: inverse shell, left-right asymmetry, chirality.

## INTRODUCTION

The vast majority of snail taxa (species, families, etc.) possess dextral shells, although the ratio of sinistral and dextral taxa largely depends on the method of calculating (Gittenberger et al., 2012). The proportion of sinistral species is significantly higher in groups having high-spired shells compared to ones with flat/globular shells. This difference is most probably due to the fact that high-spired groups mate by shell mounting, and the mating can be non-reciprocal, whereas flat and globular shelled snails mate face-to-face, having reciprocal sperm exchange (Asami et al., 1998).

Sinistral species probably most frequently evolved from sinistral mutants by spatial isolation. Therefore, the trends observed in inverse taxa might be true to inverse individuals. Namely, reverse specimens are more often found in high-spired groups than in low-spired ones. Acquiring relevant data is difficult because there might be a bias in reports across taxa, and it would be difficult to involve information of frequency in the comparison. Furthermore, it is difficult to interpret and even recognize negative data,

although there are some notes in the literature. For example, Preece and White (2008) mentioned that while reverse-coiled shells are “regularly” reported in some genera, in some other groups no sinistrals are ever found. More specifically, they have never encountered with inverse *Carychium* (high-spired) or *Vallonia* (flat) shells, although these are among the most frequently found shells in quaternary deposits in their study area. This observation might be relevant to understand left-right asymmetry in molluscs, because the groups which do not “produce” inverse individuals might have a mechanism that prevents the change of coiling direction.

Ancey (1907) published a list on inverse shells, and mentioned a sinistral *Vallonia pulchella* (O.F. Müller, 1774), although it remains unclear what he has seen himself and what he cited from the literature. Since this record is not trackable, its identity is also questionable. Here we report a sinistral shell of *Vallonia pulchella*, which is probably the



Fig. 1. Sinistral *Vallonia pulchella* (O.F. Müller, 1774) from Quaternary sediment of the brick factory of Serényfalva, Hungary.

first reliable sinistral *Vallonia* record. The relevance of this specimen is that it shows that although sinistral individuals are very rare in *Vallonia*, they are not entirely absent.

## RESULTS

The single sinistral shell of *Vallonia pulchella* (Fig. 1) was found in the drawer of types (595th cabinet, 4th drawer) in the Mollusca Collection of the Mining and Geological Survey of Hungary (MGSH, previously Hungarian State Geological Institute/MÁFI, Budapest), and marked with a red label. The data on the label are the following: “Serényfalvi téglagyár, 1. szelvény” (brick factory of Serényfalva, 1st sediment), 300–320, leg. Krolopp, 1983. This factory is located in the northern part of Hungary, coordinates 48.3057 longitude 20.3863 latitude. Unfortunately the shell is damaged, but the identification of the species is not questionable.

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