

## Chapter 24

# Another Molar of the Miocene Hominid *Griphopithecus suessi* from the Type Locality at Sandberg, Slovakia

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### ABSTRACT

A recently discovered tooth of the hominid primate *Griphopithecus suessi* Abel, 1902 is only the fifth tooth known of the species, and the first upper M3. All five teeth are from the locality known as Sandberg, near Devínska Nová Ves (formerly known as Neudorf an der March), in the northwestern suburban part of Bratislava, Slovakia. The deposit in which the locality occurs is a transgressive sequence of nearshore marine sediments that are Upper Badenian in terms of the central Paratethyan marine biostratigraphy. The locality has also yielded a land mammal fauna of modest diversity that corresponds to earliest MN6 of the European land mammal biochronology. As earliest MN6, *Griphopithecus suessi* is among the earliest known hominids in Europe. Since Abel's description in 1902, the species has had a peripatetic taxonomic and nomenclatural history, but most recently was returned to Abel's genus *Griphopithecus*, which requires that it also be returned to Abel's species *G. suessi*, the type species of the genus.

### INTRODUCTION

A left upper third molar of the hominid primate *Griphopithecus suessi* Abel, 1902 was found recently in the middle Miocene (Upper Badenian) marine sediments near Bratislava, Slovakia, at the locality presently called Sandberg. In the literature, this locality is sometimes called Neudorf an der March, or sometimes just Neudorf (the former name of the nearby village that today is Devínska Nová Ves, the northwestern-most suburban part of the city of Bratislava); it is the same locality that yielded the original material of the species described by Abel in 1902. The new find is the fifth tooth of the species to be reported from the Sandberg locality, and is the first record of the upper M3.

### OCCURRENCE AND AGE

The Sandberg locality (fig. 24.1) near Bratislava, Slovakia, is situated in what was,

during the Badenian, the near-coastal region of the Paratethys Sea in the northern part of the Vienna basin. Sandberg is an important locality in that it provides unambiguous ties among the molluscan biostratigraphy, foraminiferal zones, and terrestrial mammal biostratigraphy. The section at Sandberg is a sequence of transgressive sands and sandstones, with lenses of cross-bedded estuarine deposits (Papp et al., 1978). These littoral marine sediments contain abundant fossils (Holec, in Feráková et al., 1997), predominantly of marine invertebrates. Less common are marine vertebrates, including fishes, sharks, seals (Phocidae), sirenians, and cetaceans, and the remains of terrestrial vertebrates are also found occasionally. Holec and Sabol (1996) and Holec (in Feráková et al., 1997) summarized the invertebrate and vertebrate fauna. Koutek and Zoubek (1936), Mišík (1976, and in Feráková et al., 1997)

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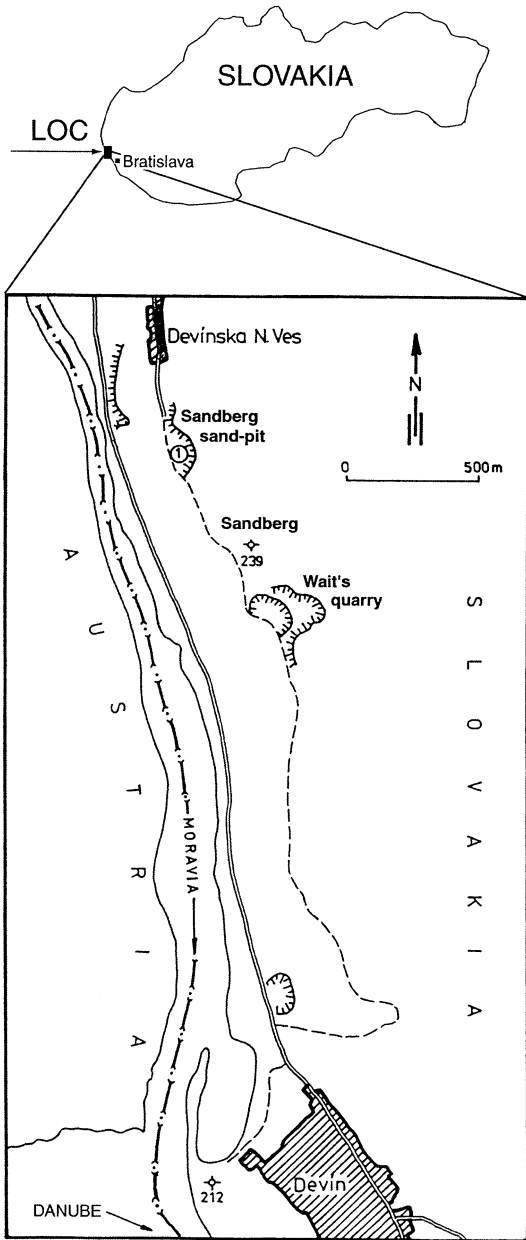


Fig. 24.1. Map indicating Sandberg locality (circled 1 at Sandberg sand-pit), with respect to Devínska Nová Ves (formerly Neudorf or Neudorf an der March).

and Baráth et al. (1994) characterized the geological conditions. The Upper Badenian age of the Sandberg locality is indicated by several species, mainly of mollusks, for example, the lamellibranchs *Pecten aduncus*

Eichwald; *Flabellipecten solarium* (Lamarck); *Chlamys multistriata* (Poli); *Panopea menardi* Deshayes; and the gastropods *Gibulla triangulata* (Eichwald), *Calliostoma trigonum* (Eichwald), *Astraea meynardi* (Michelotti), and others (Švagrovský, 1974).

The modest abundance of terrestrial mammals in marine sediments at Sandberg indicates nearshore deposition, and this is confirmed by the lithology and depositional relationships. Within a short distance from Sandberg, less than 1 km, the transgressive marine sequence can be observed to lap directly onto uplifted Mesozoic limestones on the northwest flank of Devínska Kobyla, a highland outlier at the southwestern end of the Malé Karpaty (Small or Lesser Carpathian) range. During the Badenian, this range was a peninsula or archipelago extending into the Paratethyan Sea. Before the Miocene marine transgression, a karst topography, with caves and fissures, had developed on the Mesozoic limestones. Some of these fissures (referred to as "Spalten 1–3" in the literature) produced the assemblage of terrestrial mammals described mainly by Zapfe (1949, 1960, 1979, among others).

Fejfar (1989) showed a diagrammatic section of the Sandberg locality, and indicated its relationship to the slightly older fissure sites ("Spalten 1–3") [note however that in Fejfar's diagram (1989: fig. 4) he indicated Sandberg as "2km to the E," which should say "2km to the W" and also in his text (p. 216) "northeast of Bratislava" should say "northwest of Bratislava"]. The mammalian fauna from Sandberg was described primarily by Thenius (1952). The terrestrial mammals from the site are, for the most part, fragmentary, consisting largely of isolated teeth and jaw fragments, but nevertheless Thenius (1952) listed 38 taxa, 15 of which were also recorded in assemblages from the nearby, slightly older fissure fills (Zapfe, 1949, 1960, 1979). Bruijn et al. (1992) placed both Sandberg and "Spalten 1–3" in zone MN6, citing as the principal references the analyses of rodents from Spalten 1–3 by Fejfar (1974, 1989). The superpositional relationship demands that the fissure fills (Spalten 1–3) must be older than Sandberg, although the age difference might be slight. Bernor et al. (1996) continued to believe the fissure fills

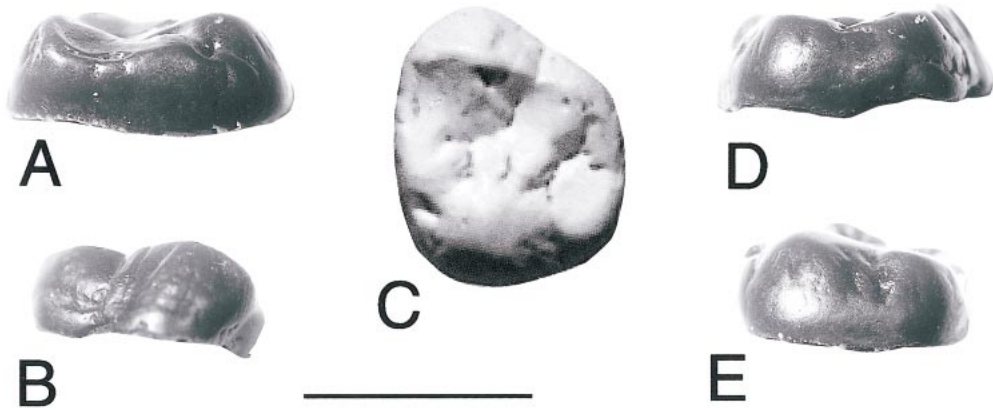


Fig. 24.2. Left M3 of *Griphopithecus suessi*, No. Z 25304 of Slovak National Museum, Bratislava. **A**, Anterior view; **B**, buccal view; **C**, occlusal view; **D**, posterior view; and **E**, lingual view. Approximately  $\times 3$ ; scale bar = 1 cm.

are latest MN5; their conclusion was based on the fact that the fissures are overlain by deposits representing the basal Langhian stage, which correlates with the Astaracian faunal unit, and the base of the Astaracian corresponds to the base of MN6. Hence, the fissure fills could predate MN6. So even though there is still uncertainty about the precise age of the fissure deposits (latest MN5 or earliest MN6), the Sandberg locality, in the marine deposits that overlap the fissure fills, seems to be unambiguously basal MN6. The hominid primate *Griphopithecus suessi* occurs at Sandberg, but has not been recorded in the fissure faunas. The Mesozoic limestones that make up Devinska Kobyla have many sediment-filled fissures, some of which are at higher elevations than the "Spalten 1–3." Future exploration of these fissures might produce fossil faunas later than those of "Spalten 1–3," coeval with the Sandberg locality, or even later. Among the more recent finds of terrestrial mammals at Sandberg is a molar tooth of *Griphopithecus suessi*, which is described below.

#### SYSTEMATIC PALEONTOLOGY

ORDER PRIMATES LINNAEUS, 1758

FAMILY HOMINIDAE GRAY, 1825

Genus *Griphopithecus* Abel, 1902

*Griphopithecus suessi* Abel, 1902

MATERIAL: Left upper M3 (fig. 24.2), catalog number Z 25304, Slovak National Mu-

seum in Bratislava. Casts are deposited in the Naturhistorisches Museum in Vienna, and in the National Museum of Natural History, Smithsonian Institution, Washington.

DIMENSIONS: Length = 12.2 mm, width = 12.6 mm, height measured on protocone = 6 mm.

DESCRIPTION: The tooth is identified as M3 because its distal (= posterior) part is substantially narrower than its mesial (= anterior) part, due both to its buccal wall being obliquely oriented, and to its hypocone being situated more buccally than would be expected in more anterior molars. Slight wear on the occlusal surface indicates that the tooth is from a relatively young, but adult individual, in which the M3 began functioning not long before the individual died.

The tooth is irregularly oval in occlusal outline. The mesial (= anterior) wall is the longest. This wall continues as a wide arc into the convex lingual wall, and it passes to the buccal wall by a rounded acute angle. The buccal wall is shorter than the mesial one, but longer than the distal one. The distal wall is shortest and is slightly convex backwards. A short cingulum is situated on the posterior part of the buccal wall, over the base of the metacone. The major cusps are all quite distinct and well defined by valleys. On the buccal wall, the valley separating the paracone from the metacone extends as a slight depression as far as the base of the tooth crown, causing the buccal wall to be slightly concave.

The paracone and protocone are of about equal height when viewed from the anterior. Rather distinct ridges extend forward and backward from the apex of the paracone, separating the external from the internal wall. The external (buccal) wall is steeper than the internal; on the inner slope the enamel is slightly rippled, and the external wall has slight vertical ribbing. The paracone has a slight wear facet on its mesiointernal slope.

The protocone is a large, irregular, blunt cone. A slight wear facet can be seen near its apex. A ridge or spur extends mesiobuccally from the protocone toward the small protoconule, a swelling midway along the mesial margin of the tooth. Buccal to the protoconule, near the mesial margin of the tooth, is a small pit, the remnant of the fovea anterior. Lingual to the protoconule, on the mesial slope of the protocone, is a small depression, or pit. Another ridge extends distally from the apex of the protocone toward the hypocone, and yet another small spur extends from the protocone into the basin between it and the paracone. The inner (lingual) slope of the protocone has slight vertical ribbing of the enamel.

The metacone and hypocone are subequal in height, and both are slightly shorter than the paracone and protocone. The metacone has a mesial ridge that meets the distal ridge of the paracone, and a linguodistally directed crest that reaches to the buccal margin of the hypocone. Midway between the metacone and protocone is a small, low metaconule; this small cusp is less distinct from the metacone than from the protocone. The metacone has a slight wear facet on its mesiointernal slope, similar to that of the paracone.

The hypocone is situated distal and buccal to the protocone. It merges with the thick distal ridge of the protocone, but is otherwise quite distinct. It has a distinct wear facet, more prominent than that of the protocone, but the dentine is not uncovered.

#### NOMENCLATURE DISCUSSION

Hominid primates were first reported from the Sandberg locality by Abel (1902), who described two teeth. For one tooth that he identified as a left upper M1 or M2, he erected a new genus and species, *Griphopithecus*

*suessi*. The second, a lower left m3, he assigned to the preexisting genus *Dryopithecus* Lartet, 1856, creating the new species *D. darwini* for it. Abel mentioned these teeth in subsequent publications, including his "Lebensbilder aus der Tierwelt der Vorzeit" (1927), and they were mentioned by numerous other authors (see Steininger, 1967, for exhaustive synonymy).

After Abel's (1902) descriptions, nearly three decades passed before Glaessner (1931) described a third tooth, a left upper molar (M1 or M2), from the same locality. Glaessner (1931) pointed out that this new upper molar was substantially larger than the "M1 or M2" described by Abel (the holotype of *G. suessi*), and of appropriate size to be associated with the lower m3 that Abel had named *D. darwini*. Supported by comparisons with deciduous dentitions of modern humans and chimpanzees, Glaessner (1931) concluded that the smaller "M1 or M2" named *G. suessi* by Abel (1902) was actually a deciduous P4, and that it and his newly described upper molar (M2 or possibly M1) were upper teeth of *D. darwini*. Glaessner placed the three teeth in *D. darwini*, and considered *G. suessi* to be a junior synonym. Glaessner was the first reviser, but it appears that he simply made a taxonomic choice at the genus level ("do the teeth represent *Dryopithecus*, or do they represent a distinct genus, *Griphopithecus*?"), without considering the nomenclatural choice at the level of species. At the very least he did not appropriately follow the nomenclatural "principle of first reviser" (International Commission on Zoological Nomenclature, Article 24), which recommends that, if neither name has any special nomenclatural advantage, or other special appropriateness, and the names occur in the same work, an author acting as first reviser should select that which appears first (i.e., page precedence). In synonymizing Abel's two species, Glaessner should first have determined that "*suessi*" (Abel, 1902: 1177) had priority over "*darwini*" (Abel, 1902: 1185) as the species epithet, and then should have made his taxonomic assignment at the generic level. If he believed the teeth represented a single species, but represented *Dryopithecus* rather than *Griphopithecus*, he should have used the combination *Dryopi-*

*theus suessi*. Despite the subsequent taxonomic and nomenclatural history, the correct nomenclatural choice for the species epithet remains the same today, and the genus *Griphopithecus* cannot be valid otherwise.

Since Glaessner's (1931) synonymy, the hominid teeth from Sandberg have been consistently regarded as representing but one species, with which we are in accord. However, the species has had a peripatetic taxonomic and nomenclatural history, having been shuffled among several genera.

The nomenclatural error that has been perpetuated for more than 70 years was exacerbated by Lewis (1937) who placed the species *Dryopithecus darwini* in the genus *Sivapithecus* Pilgrim, 1910. Lewis (1937: 145) justified his assignment with the statement that "the writer assigns this species to *Sivapithecus* because all morphological affinity lies with this genus rather than with the European *Dryopithecus*." He noted Glaessner's (1931) synonymy: "*Dryopithecus darwini* Abel (= *Griphopithecus suessi* Abel)." What Lewis failed to recognize was that, if the affinities of these teeth from Sandberg, Slovakia, are not with *Dryopithecus*, then they are, by definition, *Griphopithecus*. In fact, if Lewis (1937) considered the teeth from Sandberg to be congeneric with the Siwalik material assigned to *Sivapithecus*, then *Griphopithecus* Abel, 1902, had priority as the generic name, and Lewis should have recognized *Sivapithecus* Pilgrim, 1910, as the junior synonym.

After Glaessner (1931), almost four decades passed before another tooth of the species, also from the same locality, was reported by Steininger (1967), who described a right lower m3. He also redescribed and reillustrated the three previously known teeth, and provided a comprehensive synonymy that included all references to the species. Steininger (1967) assigned the teeth to *Dryopithecus (Dryopithecus) fontani darwini*, using the subgenus established by Simons and Pilbeam (1965), and reducing *darwini* to a subspecies of *D. fontani*, the type species of *Dryopithecus* established by Lartet (1856) for material from St. Gaudens, France.

In their review of European Miocene catarrhines, Andrews et al. (1996) resurrected

Abel's genus *Griphopithecus* for the teeth from Sandberg, and also for more recently discovered material from Turkey. The Turkish material included the specimens from Çandir originally described by Tekkaya (1974) as *Sivapithecus alpani*, subsequently transferred to *Ramapithecus* (later *Kenyapithecus*) *wickeri*, and some additional material from Paşalar later assigned to the same species (Andrews and Tobien, 1977). When more abundant remains were collected at Paşalar, the Turkish material was seen to be distinct from the African material, and was transferred from *Kenyapithecus* back to *Sivapithecus* (Alpagut et al., 1990). Andrews and Tobien (1977) had noted that dentally the Turkish material was very similar to the teeth from Sandberg, and as better-preserved material was discovered at Paşalar, Andrews et al. (1996) recognized that, in the subnasal and premaxillary regions, the Turkish material differed from *Sivapithecus*. To recognize the distinctness of this taxon, Andrews et al. (1996) resurrected Abel's (1902) genus *Griphopithecus*, using the combination *Griphopithecus alpani* for the Turkish specimens, and incorrectly using the combination *Griphopithecus darwini* for the Sandberg sample. Some statements by Andrews et al. (1996) suggest that they failed to review some of the literature pertinent to the nomenclatural history of the species. For example, they commented (1996: 179) that "the four Neudorf Sandberg teeth described by Abel (1902) were originally assigned to two genera and species. . . ." In fact, Abel (1902) described only two teeth; the third was described by Glaessner (1931) and the fourth by Steininger (1967). They again mentioned (1996: 178–179) four teeth from Sandberg, citing Abel (1902), and Steininger (1967), but not Glaessner (1931), and then conclude that "although originally assigned to two genera and species, we consider that in fact they all belong to the one species, which as first revisers we have identified as *Griphopithecus darwini*." This perpetuates the error in choosing the species name originally made by Glaessner (1931), who was actually the first reviser, and results in an impossible nomenclatural combination. The genus *Griphopithecus* cannot be used until this error is corrected. The genus is not valid unless its

type species is also valid. The type species of *Griphopithecus*, by original designation, is *G. suessi*. It was the only species named for the genus, and it was labeled “*Griphopithecus suessi* n. gen. n. spec.” (Abel, 1902: 1177). If *Griphopithecus* is resurrected as a valid genus, the species must be *G. suessi*.

Clearly much difference of opinion has existed regarding the taxonomic assignments of the various genera and species of European and Asian Miocene hominids. McKenna and Bell (1997), for example, listed *Griphopithecus*, along with *Sivapithecus*, among the many synonyms of *Dryopithecus*. It is not the purpose of this report to review the relationships and revise the taxonomy of these European Miocene hominids. For purposes of this paper, we follow the taxonomic interpretations of Andrews et al. (1996), who regard the Sandberg sample as representing a single species, returned to *Griphopithecus*, the genus originally erected for it; we simply make the nomenclatural point that the species cannot be returned to Abel’s genus *Griphopithecus* without being assigned to Abel’s type species *G. suessi*.

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