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## ANIMAL AND PLANT REMAINS IN A TOMB IN TEST-PIT 1/05, OUTSIDE THE FORTIFIED IMPERIAL PALACE FELIX ROMULIANA

*Abstract.* – During the excavations of a tomb located outside the defence walls of the imperial palace, Felix Romuliana, animal and plant remains were collected, the analysis of which is the subject of the present study. The faunal remains include the bones and teeth of domestic animals – mule (*Equus caballus x Equus asinus*), domestic ox (*Bos taurus*), sheep (*Ovis aries*), sheep or goat (*Ovis/Capra*), pig (*Sus domesticus*) and dog (*Canis familiaris*), a few remains of wild animals – red deer (*Cervus elaphus*) and fox (*Vulpes vulpes*), and bone of a bird. Until now, no remains of mule have been discovered on sites originating from the classical period at the territory of Serbia. As for plant remains, pieces of carbonized oak wood (*Quercus*) and maple wood (*Acer*) were found, as well as a carbonized seed of a cultivated grapevine (*Vitis vinifera vinifera*) and a tiny fruit of goosegrass (*Galium aparine*).

*Key words.* – Felix Romuliana, imperial palace, animal remains, plant remains, *Equus caballus x Equus asinus*.

### Animal remains from the tomb in test-pit 1/05

**D**uring the excavations of the tomb outside the defence walls of the imperial palace, Felix Romuliana (Petković, in the present issue of *Starinar*), animal bones were discovered and collected from the layer covering the tomb. This layer was designated as layer A characterized by dark-brown clay soil containing construction debris and fragments of pottery dating from the late classical, medieval and recent periods. The average thickness of this layer was approx 35 cm. The animal bones were also collected from the layer of light brown soil beneath it (marked as layer B), as well as the fill of the tomb, the central grave and the grave of a child in the eastern corner of the tomb.

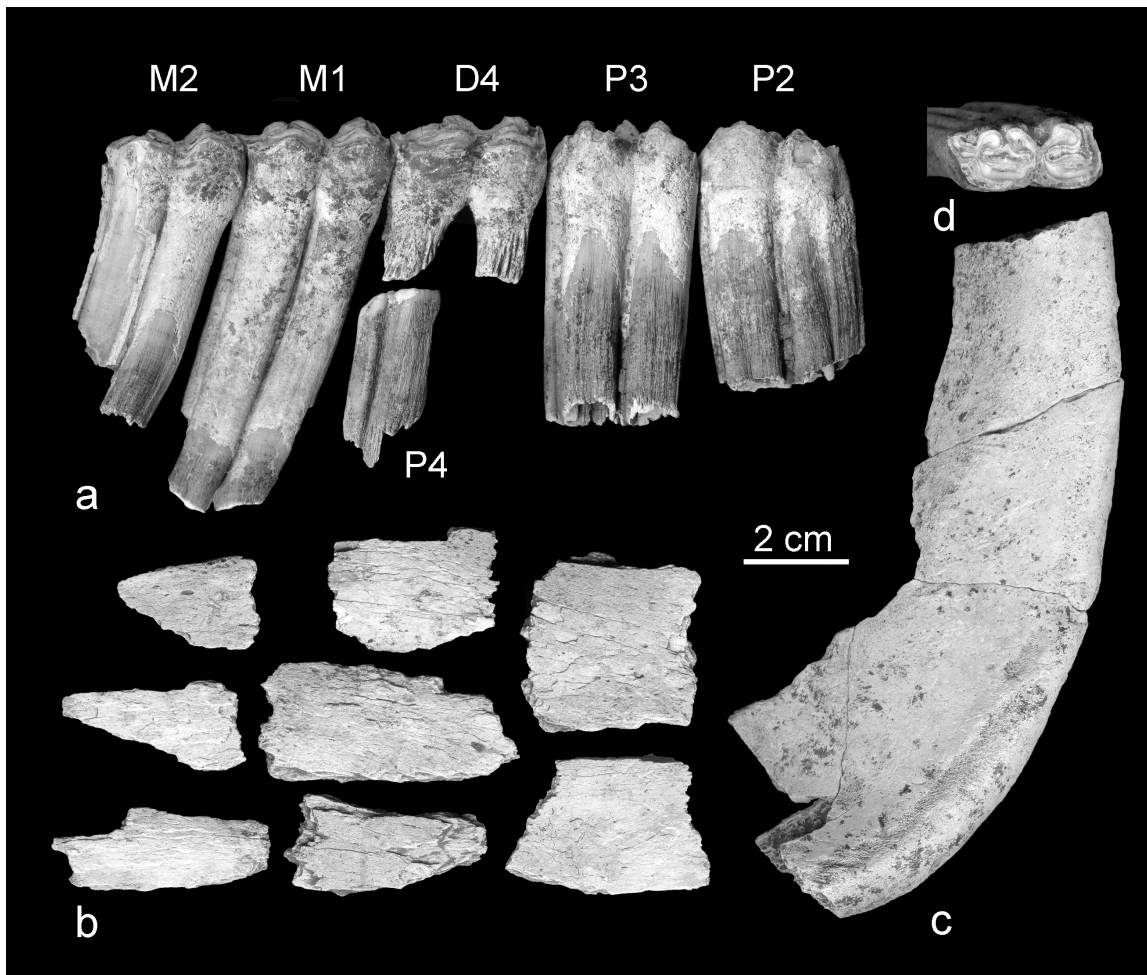
In layer A, which covered the tomb, the remains were found of domestic cattle (*Bos taurus*), sheep or goat (*Ovis/Capra*) and red deer (*Cervus elaphus*). Two teeth originated from the domestic cattle, probably from the single lower jawbone – the right lower first molar and the right lower rear milk molar. A left upper second molar was found, which originated from a sheep or a goat, as well as the diaphysis of the shinbone of a red deer. There were also remains that could not be identified at a species level: a cranial bone, two fragments of a rib and three fragments of

the long bones of large mammals, as well as a fragment of the diaphysis of a humerus and a fragment of the diaphysis of the long bone of a medium-sized mammal.

In this layer, in the extension of the test-pit towards the southeast, following remains were discovered: the fragmented right lower second molar of a mule (*Equus caballus x Equus asinus*), the teeth of a domestic cattle (the left upper third premolar and the fragmented, right lower third molar) and the first phalanx, as well as three fragments of long bones, belonging to large mammals, and two fragments of long bones belonging to medium-sized mammals.

In the same layer, to the northeast of the tomb, the following remains were excavated: the distal part of the metacarpus and two bones that came from the rear extremities of a domestic cattle (the right centro-tarsal and the fragment of the left talus), a fragment of a germ of the last molar from a domestic pig (*Sus domesticus*) and the diaphysis of the humerus of a fox (*Vulpes vulpes*).

In layer B, to the northeast of the tomb, the following remains were found: a fragment of the vertical ramus of a mule's lower jaw, the proximal end of the metacarpus of a domestic cattle, the distal joint of the first phalanx of a goat or sheep, and four fragments of the long bones of large mammals.



Сл. 1. Остаци доње вилице муле (*Equus caballus* x *Equus asinus*) из гробнице у сонди 1/05. а – реконструкција зубног низа: фрагменти дужио молара ( $M_2$ ), први молар ( $M_1$ ), задњи млечни молар ( $D_4$ ), фрагмент клице четвртог премолара ( $P_4$ ), трећи ( $P_3$ ) и други ( $P_2$ ) премолар, б – фрагменти хоризонталне гране, и – фрагмент вертикалне гране, д – први доњи молар ( $M_1$ ) оклузално.

Fig. 2. Lower jaw of a mule (*Equus caballus* x *Equus asinus*) from the tomb in test-pit 1/05. a – reconstruction of the tooth-row: fragment of the second molar ( $M_2$ ), the first molar ( $M_1$ ), the last milk molar ( $D_4$ ), fragment of the germ of the fourth premolar ( $P_4$ ), the third premolar ( $P_3$ ), and the second premolar ( $P_2$ ), b – fragments of the horizontal ramus, c – a fragment of the vertical ramus, d – the first lower molar ( $M_1$ ), occlusal.

During the excavation of the central grave in the tomb, the remains of dog, mule, domestic cattle, pig, sheep and a bone of a bird (a fragment of the diaphysis of the right metatarsus) were collected. The majority of the remains originated from domestic cattle: the fragment of a root of a lower molar crown, the fragment of a right lower third molar, a fragment of a joint head and a diaphysis of the left thigh bone, the proximal end of the right thigh bone, the distal epiphysis of the shin bone and one second phalanx. All the remains of the mule came from the right lower jawbone, although the fragments could not be conjoined. They were

weathered fragments of the horizontal ramus of the lower jaw (fig.1, b) and, more or less well preserved teeth (the last milk molar, second and third premolar, a fragment of the fourth premolar germ and the first molar) (fig.1, a). Remains of domestic pig comprised a fragment of a temporal bone, a proximal fragment of the third metatarsus and two foetal shoulder bones, left and right, which doubtlessly originated from the single foetus. The distal part of a shinbone belonged to a sheep (*Ovis aries*), but as for a fragmented tiny bone from the ankle (intermedium), it was impossible to determine whether it came from a sheep or a goat.

The lower, right jawbone with alveoli for premolars and molars, the distal part of a right shinbone and the distal ends of two metapodials were discovered to have come from a dog.

At the bottom of the grave pit of the central grave, in the layer of soot and ashes beneath cremated human bones, there were a carbonized wood and the carbonized fragments of a long bone belonging to a large mammal and other fragments of unidentifiable animal bones.

In the disturbed grave of a child – in a cyst made of tegulae in the eastern corner of the tomb, fragments of the epiphysis of a radius and the second phalanx of a domestic cattle and a fragment of a distal end of the metacarpus from a sheep were found.

Dimensions of each specimen are shown in table 1.

The majority of remains were those of domestic cattle. At least two of these animals were represented. All the lower jaw teeth (the last milk molar, the first molar and the germ of the last molar) most probably originated from the same right lower jaw belonging to a 24-month to 30-month old animal (Habermehl, 1975:85), whereas the third premolar from the upper jaw was rather worn out and belonged to an older, full-grown animal. There were no repeated elements among the remains of the post-cranial skeleton, suggesting that there was more than one animal; all the remains corresponded either to a young animal that was not yet fully grown (to which the distal epiphyses of a radius and a shinbone belonged), or to a fully grown animal (from which the thigh bones and the metacarpus originated). Based on the length of the metacarpus, the withers height could be established and, according to the index Matolcsi (1970: 113) provided, it measured 131.2 cm. There are few archaeozoological data available for the territory of Moesia that would make it possible for us to discuss the characteristics of a domesticated animal population, but based on the finds from the neighbouring provinces one may assume that in Roman times, there were local breeds of smaller size animals in Moesia, inherited to a great extent from the Iron Age, as well as a larger breed imported from Italy. Thus, on a large sample from the Roman Pannonian town of Tac-Gorsium, Bökönyi singled out a local breed with a withers height of less than 120.0 cm, and a larger breed introduced from Italy, with a withers height exceeding 125.0 cm (Bökönyi, 1984: 28). A metacarpus, based on which

the withers height of the domestic cattle's from Romuliana was estimated, would certainly correspond to the second breed.

The bones of a dog were found only in the central grave of the tomb. They belonged to a large-sized breed. The lower jaw was elongated, and the arrangement of the alveoli suggested that the premolars were set apart from each other, particularly the second and third. The distal part of the shinbone belonged to a sub-adult dog: the line where the distal epiphysis and the diaphysis grew together was visible.

It appears that the remains of a mule were primarily located only in the central grave of the tomb. They consisted of a larger number of fragments and isolated teeth, all of which originated from the same lower jaw. The teeth, the last milk molar, the second and third premolar, a fragment of the fourth premolar germ, the first molar and a fragment of the second molar, were well preserved (fig. 1, a), but the parts of the horizontal (fig. 1, b) and the vertical ramus (fig. 1, c) of the jaw showed visible signs of weathering. The animal, to which the jaw had belonged, was about three years old; it was less than three and a half years because, at that age, the last milk molar (D<sub>4</sub>) was replaced by the fourth, permanent premolar (P<sub>4</sub>) (Habermehl, 1975, 32). In our specimen, D<sub>4</sub> was still functional, although it was rather worn out, and part of the crown of the permanent premolar (P<sub>4</sub>), which had grown in the alveoli under the milk D<sub>4</sub> tooth, was preserved. The age of the animal was more than three years because the premolars P<sub>2</sub> and P<sub>3</sub> were not worn out, and they begin to show signs of wear at the age of three, at the latest (Hillson, 1990, appendix D, after Levin, 1982).

One may conclude that this was a hybrid horse based on the morphology of the occlusal surface of the teeth, according to the distinguishing criteria established by quite a few authors (Davis, 1980; Eisenmann, 1981; Johnstone, 2004). The groove of the double loop is deep and V-shaped. In a horse, such a groove is U-shaped and, in a donkey, it is also V-shaped, but shallow. The double loop is roughly symmetrical, with rounded posterior (metastilid) and anterior (metakonid) parts. The double loop in a horse is asymmetrical, with an angular metastilid and rounded metakonid. The buccal fold enters the neck of the double loop and almost touches its base on M<sub>1</sub> (fig. 1, d). In a donkey, this fold does not reach the neck of the double loop.

Table 1.

<i>Canis familiaris</i>		
mandible	alveolar length P2-M3	80.3
alveouls for M1	length	20.0
tibia	medio-lateral width of the distal end	22.0
	antero-posterior width of the distal end	17.3
Mp indet.	medio-lateral width of the distal end	8.1
<i>Vulpes vulpes</i>		
humerus	minimum medio-lateral width of the diaphysis	7.9
<i>Equus caballus x Equus asinus</i>		
P2	length	30.4
	width	14.2
P3	length	28.2
	width	15.0
M1	length	24.2
	width	14.5
D4	length	30.7
	width	15.3
<i>Sus domesticus</i>		
humerus (foetal)	length	25.5
matatarsus III	medio-lateral width of the proximal end	15.8
	antero-posterior width of the proximal end	20.8
<i>Cervus elaphus</i>		
tibia	minimum medio-lateral width of the diaphysis	30.6
<i>Bos taurus</i>		
P2	length	15.4
	width	18.3
D4	length	29.8
	width	11.3
M1	length	27.5
	width	14.6
metacarpus	length	212.2
	medio-lateral width of the proximal end	56.7
	antero-posterior width of the proximal end	33.8
	medio-lateral width in the middle of the diaphysis	
	medio-lateral width of the distal end	57.0
	antero-posterior width of the distal end	31.0
centrotarsale	medio-lateral width	53.1
	antero-posterior width	49.1
Ph I	abaxial length	~ 49.5
Ph I	medio-lateral width of the distal joint	26.5
Ph II	abaxial length	37.2
	medio-lateral width of the proximal end	29.4
	medio-lateral width of the distal end	25.2
Ph II	abaxial length	43.6
	medio-lateral width of the distal end	24.6
<i>Ovis aries</i>		
tibia	medio-lateral width of the distal end	28.2
	antero-posterior width of the distal end	21.0
<i>Ovis/Capra</i>		
M2	length	16.7
	width	11.6
Ph I	medio-lateral width of the distal joint	11.8

The mule, the hybrid of a horse, was a favourite animal in the Roman world. It was used for riding, pulling a plough or a cart, and for carrying cargo (Clutton-Brock, 1987:98). Among the remains of horses from the classical period discovered to date in the territory of Serbia (Blažić, 1995; Gilić, 1994; Nedeljković, 1977), the remains of mules have not been identified.

The collected animal bones were mostly yellowish with black spots, originating from organic materials – compost or fertilizer from a ploughed field in the topsoil. The bones were mainly fragmented but relatively well preserved, without any traces of weathering that would indicate that they had laid on the surface, exposed to atmospheric conditions before they reached this context. Some specimens showed traces of plant roots, what may have been because they had lain near the surface and the arable topsoil. The shinbone of a red deer differed in colour and physical-chemical alterations from the other bones. This bone was light brown in colour, and its surface was considerably damaged, most probably due to the corrosive action of a chemical agent.

Except for the fragmented bones from the bottom of the grave pit in the central grave, which were carbonized, i.e. burned at a relatively high temperature, no traces of fire could be seen on the other bones.

Some bones bore visible traces of the teeth of carnivorous animals, probably of a dog: the phalanx of the domestic cattle from layer A, covering the tomb, the two proximal ends of the thigh bone of cattle, and the distal part of the shinbone of a sheep from the central grave in the tomb, as well as the second phalanx of cattle from the child's grave. On one of the thigh bones with the traces of teeth, there are also traces of an artefact made by a metal blade.

In layers A and B, fragments of the same bones were found: in layer A, northeast of the tomb, the proximal fragment of a metacarpus from cattle and, in layer B, a distal fragment of the same bone. Part of a mule's jaw-bone was also found in layer A, northeast of the tomb, most probably belonging to the same jaw as the fragments of the jaw and teeth found in the central grave in the tomb; a tooth fragment, found in layer A in the northeast extension of test-pit 1, also came from the same jaw-bone. The second phalanx of the cattle, excavated from the central grave in the tomb, also articulates with the first phalanx, excavated in layer A of the test-pit extension to the southeast. Based on the aforesaid, one can conclude that the layers A and B were formed most probably through

more recent ploughing activities, and that the animal bones had all originally been in the same layer, i.e. context.

The question arises as to whether the gathered animal bones were connected to a funeral rite that took place immediately after the cremation and deposition of the ashes of the deceased in the tomb, or in a later period. Perhaps they might have represented the usual inventory of a »cultural layer« outside a fortification.

Based on the composition of the fauna and the occurrence of the different fragments of the skeletons, we cannot find a reliable answer to this question, especially because the bones, most probably due to ploughing, were dislodged from their initial context, and an unknown part of the sample is missing. The diversity of the remains does not confirm the hypothesis that they were ritual remains: there were eight kinds of different animals, some of which were ordinary domesticated farm animals (cattle, sheep, pig), raised for their meat and other products, and the others were domestic animals that were not primarily raised for their meat but as traction or load carrying animals (mule), or as pets or for guarding (dog). Wild animals were also represented, a red deer and a fox, although it is possible that the bone of a red deer was from another context, considering the taphonomic characteristics according to which the bone differed from all the other osteological finds. In the case of funerary rites, one would expect a lesser variety – either the remains of animals sacrificed as offerings of food, such as the remains of cattle, sheep or pig, or those animals that might have belonged to the deceased person: those animals the deceased might have used for riding during his life, such as mule, or pets, such as his own dog. However, one cannot exclude the possibility that all the remains of the animals were related to the rite that took place immediately after the cremation and interment of the remains of the deceased person in the tomb, but the remains might have been the outcome of repeated rituals to commemorate the deceased.

In addition, the diversity of the available skeleton elements did not indicate that they were linked to a funerary rite: there were fragments of a jaw-bone, i.e. teeth, and different parts of limbs, both proximal fragments, which could be interpreted as the leftovers of food offerings (for example, the proximal fragments of the thigh bones of cattle), as well as distal fragments (the metapodial bones, the carpal and tarsal, and the phalanx of cattle, pig, and sheep or goat).

### Archaeobotanical analysis of samples from the tomb in test-pit 1/05

During the year 2005, an archaeobotanist from Novi Sad joined the team of archaeological researchers in Gamzigrad. In the course of archaeological exploration conducted in the immediate surroundings of the southern defence wall of the imperial palace, a tomb was found that had originated from the period of the tetrarchy (the end of the 3<sup>rd</sup> and the beginning of the 4<sup>th</sup> century). Several samples of soil, containing carbonized plant material needed for macrobotanical, archaeobotanical analyses were collected from the tomb, as well as from the »cultural« layer into which it had been dug (in the second half of the 3<sup>rd</sup> century). The manual flotation of the samples ( $\pm 10$  litres of substratum per sample) was carried out in the Museum of Vojvodina. For the requirements of the flotation process we used a sieve, dia. 0.25 mm, to prevent even the smallest plant seeds being missed in the tests. The plant material consisting mainly of carbonized wood – charcoal – had been drying slowly for several days in a dry, dark room in order to be checked later under a binocular magnifier, magnifying up to 45 times.

From five samples taken from the tomb, we singled out 133 pieces of carbonized wood larger than one centimetre. The largest number of finds (93) consisted of the remains of a species of the oak tree (*Quercus*). The remainder was attributed to a species of maple tree (*Acer*). The distribution of the finds in the tomb was uneven. The three samples, excavated from beneath the »mantle« of the burial mound, where we had found the remains of a pyre (soot, human and animal bones, a gold fibula), contained the remains of both genera of tree, in which those of oak predominated. We were able to identify only the remains of oak in the grave pit, whereas the finds of maple dominated in the sample originating from the »mantle« above the burial mound. The composition of the identified genera of trees fitted in very well with the natural environment of Gamzigrad.

The natural, potential vegetation of this hilly area around Galerius's palace consists of forests, in which the pomegranate oak and Turkey oak (*Quercus ceris*) are native (Group of Authors, 1983). Other species of smaller trees grow in these temperate and radiant forests, as well as many species of shrubs and a large number of herbaceous plants, at ground level. Among

the smaller trees and shrubs, we most frequently encounter another species of maple, the rowan, wild pear, elm, hawthorn, blackthorn, red dogwood, rose and sumac (Janković et al., 1984). On the alluvial deposits of the Crni Timok River, the potential vegetation mainly comprises moist and logwood forest of English oak, European ash, alder, willow and poplar. The higher altitudes around Gamzigrad, characterized by lower average temperatures and a higher level of humidity, are covered in mountain beech wood, mountain maple and maple beebread trees, European ash, a species of maple, the silver-leaf linden, hazel bushes and gurgling shrubs. The rich forestland of Timočka Krajina suddenly began to dwindle after the liberation from the Turks, in 1833 (Mihajlović, 1982). In the beginning, this applied only to the areas of forestland. However, as time went on, the selective felling of certain species of trees led to a change in the structure of the remaining forests. This resulted in the reduction of wooded areas in the Zaječar region by about 35% (data from 1998).

In one of the two samples from the interior of the tomb, which belonged to the habitation layer in which the tomb was built, apart from the remains of carbonized wood from a species of maple, we discovered the carbonized seed of a cultivated grapevine (*Vitis vinifera* L. subsp. *vinifera*) and the tiny fruit of goosegrass (*Galium aparine* L.). In the second sample, we only found remains of a species of oak.

### Conclusion

The analyses of the animal and plant remains discovered in the tomb in test-pit 1/05, were done, first, because they were believed to have been connected with a funeral rite. There is no doubt that the fragments of carbonized oak and maple are the remains of wood burned on a funeral pyre. However, where it concerns the other organic finds, the animal bones and teeth, the seed of the grapevine and the fruit of the goosegrass, it is impossible to tell whether they originate from the habitation layer in which the tomb was dug, or whether they are remains that were deposited during the funeral rite. This refers particularly to the animal remains, which, as we ascertained, had been moved postdepositionally from their original location, most probably due to modern methods of soil cultivation.

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**Резиме:**

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## ОСТАЦИ ЖИВОТИЊА И БИЉАКА ИЗ ГРОБНИЦА У СОНДИ 1/05, ВАН УТВРЂЕНЕ ЦАРСКЕ ПАЛАТЕ FELIX ROMULIANA

Током ископавања гробнице из периода тетрахије (крај 3./почетак 4. века) у непосредној близини јужног бедема царске палате *Felix Romuliana* сакупљени су остаци животиња и биљака.

Животињске кости сакупљене су из слоја који је прекривао гробницу (означен као слој А) (тамно-мрка глиновита земља са остацима ситнијег грађевинског шута и фрагментима касноантичке, средњовековне и рецентне грнчарије, просечне дебљине око 35 цм), из слоја светло мрке земље испод њега (означен као слој Б), који чини и испуњу гробнице ван централног гроба, затим током ископавања централног гроба у гробници и дечјег гроба у источном углу гробнице.

Откривени су остаци говечета (*Bos taurus*), муле (*Equus caballus x Equus asinus*), овце (*Ovis aries*), овце или козе (*Ovis/Capra*), свиње (*Sus domesticus*) и пса (*Canis familiaris*), малобожни остаци дивљих животиња – јелена (*Cervus elaphus*) и лисице (*Vulpes vulpes*), као и једна кост птице.

Најбројнији су остаци говечета. Заступљене су најмање две јединке. На основу дужине метакарпуса израчуната је висина гребена од 131.2 цм према индексу који је дао Matolcsi (1970: 113). На основу овога се може претпоставити да не припада ситнијој локалној раси, наслеђеној из гвозденог доба, чији се узгој на територији Мезије може претпоставити на основу података из суседних провинција, већ крупнојој раси уведеној из Италије.

Кости пса откривене су само у централном гробу у гробници. Припадају некој већој раси пса.

И остаци муле изгледа да су се примарно налазили само у централном гробу у гробници. Ради се о већем броју фрагмената и изолованих зуба који сви потичу из исте доње вилице. Старост јединке којој је вилица припадала је

око 3 године. Муле, хибриди коња, биле су омиљене животиње у Римском свету. Коришћене су за јахање, вучу плуга и кола, и за ношење терета (Clutton-Brock, 1987: 98). Остаци муле нису до сада били откривени на налазиштима из античког периода са територије Србије.

На основу састава фауне и заступљености различитих делова скелета не може се доћи до поузданог одговора на питање да ли су сакупљене животињске кости у вези са погребним ритуалом који се одвијао после спаљивања и полагања остатака покојника у гробницу.

С обзиром да су у слојевима А и Б пронађени делови истих костију, може се закључити да су ови слојеви формирани постдепозиционо, односно највероватније савременом обрадом земље, да су животињске кости делом измештене из првобитног контекста, и да непознати део узорка недостаје. Разноврсност остатака не говори у прилог хипотези да су у питању обредни остаци: заступљени су остаци осам врста различитих животиња, две дивље (јелен, лисица) и шест домаћих, од којих су неке уобичајене сточне животиње гајене због меса и других производа (говече, овца, свиња), а друге домаће животиње које се примарно не гаје због меса, већ као животиње за вучу и ношење терета (мула), или као љубимац или чувар (пас). Код погребних ритуала очекивали бисмо мању разноврсност – или остатке животиња који су приношени као прилог у храни, као што су остаци говечета, овце и свиње, или животиња везаних за покојника, што би могле бити животиња коју је покојник јахао, као мула, или његов сопствени пас. Разноврсност заступљених делова скелета такође не указује на њихову везу са погребним обредом: заступљени су делови вилица, односно зуби, и различити делови екстремитета, како проксимални делови који би се могли тумачити као остаци понуда у хра-



ни (на пример проксимални делови бутних костију говечета), тако и дистални делови (метаподијалне кости, карпалне и тарзалне и фаланге говечета, свиње, и овце или козе).

Међутим, није искључена могућност да је део остатака животиња заиста у вези са ритуалом који се одвијао непосредно после спаљивања и полагања остатака покојника у гробницу, и/или поновљених обреда у знак сећања на покојника, а да део остатака потиче из културног слоја ван гробнице.

Биљни остаци издвојени су ручном флотацијом, уз коришћење сита промера 0,25 мм, и прегледани под бинокуларном лупом увећања до 45 х.

Из пет узорака издвојено је укупно 133 комада угљенисаног дрвета већег од 1 цм. Највећи број налаза (93) чине остаци једне врсте храста (*Quercus*). Остатак налаза (40) приписује се једној врсти јавора (*Acer*). Расподела нала-

за у гробници је неуједначена. У три узорка који су извађени испод »плашта« хумке у којој су се налазили остаци ломаче (гареж, људске и животињске кости, златна фибула) заступљени су остаци оба рода дрвећа, са тим да у њима доминира храст. У гробној јами идентификовани су само остаци храста, док су налази јавора доминирали у узорку који потиче из »плашта« изнад хумке. Састав идентификованих родова дрвећа веома добро се уклапа у природно окружење Гамзиграда.

У једном од два узорка из унутрашњости гробнице, који припадају насеобинском слоју у којој је гробница била укопана, осим остатака угљенисаног дрвета једне врсте јавора пронађени су једна угљенисана семенка културне винове лозе (*Vitis vinifera* L. subsp. *vinifera*) и један плодић лепуше броћике (*Galium aparine* L.). У другом узорку констатовани су само остаци једне врсте храста.