

THE 2023 AUSTRIAN AL JUMAYL PROJECT

PRELIMINARY REPORT¹

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Introduction

B. Hamarneh

From August 28 to September 27, 2023, the University of Vienna team conducted an archaeological campaign in Al Jumayl (Amman Governorate) with the goal of expanding the investigation of the church that had been partially excavated during the 2021 and 2022 campaigns. Excavating the north church to the fullest extent possible, locating the north exterior wall, and determining its relationship to the second parallel church to the south and the nearby north building complex were the main goals. Another major goal of the study was to comprehend the historical relationships between the two churches and how they have operated over time.

The excavation is a component of the research project “Rethinking Periphery in Late Antique Arabia”, which has the overarching aim to of understanding the village’s significance in the evolving topography of the Dioceses of Mādabā in the Byzantine and the early and late Islamic

periods. This includes the built environment, cultural artefacts, agriculture, water resources, land use, and economic networks. Layers of use, abandonment, and reuse were discovered during the double church complex excavations, which took place between 2019 and 2023. This ecclesiastical structure which develops on the lower terrace in the southern part of the settlement, comprises two single-nave adjacent buildings, dating back to the Byzantine period. The previous campaigns of 2021 and 2022 already uncovered the apse, presbyterium and a small part of the nave of the north church, with remarkably well-preserved walls and architectural remains such as pillars, pilasters, and arch stones. The church incorporates Roman-Nabataean spolia, partially plastered walls, and a polychrome mosaic floor. Furthermore, the village survey made it possible to record the existence of cisterns, caves, and a sizable stone quarry.

The Campaign of 2023

BH, TL, MLL

The Al Jumayl double church complex’s north nave excavation yielded important new information about the stages at which the settlements evolved in the Late Antique and Early Islamic eras. The new data clearly separate the settlement activity at Al Jumayl from that of nearby larger settlements such as Um er-Raṣās, and show a continuity into the Middle and Late Islamic periods that has not previously been demonstrated for the surrounding villages. Furthermore, work on

1. We would like to thank the Director General, Prof. Dr. Fadi Bal’awi, as well as the staff at the DoA for their invaluable assistance to the excavation team. We wish also to express our gratitude to Mr. Aktham Oweidi, the Director General’s Technical Assistant, Mr. Hussein Saleh from the Excavation and Survey management team, and Mr. Mohammad Saleh, and Mr. Yaser Hashem, who served as DoA representatives and provided us with scientific and logistical support. We are especially grateful to HE the Ambassador of Austria Mrs. Dr. Marieke Zimburg, and to the staff of the Austrian Embassy in Jordan for their unwavering support and interest in our work. We are grateful to Franco Sciorilli, and especially to the community of Al Jumayl for their kindness.

excavating the southern church complex's presbytery and apse has started. An initial evaluation of the church's conservation state and the anticipated stratigraphy was given by this work. The severely damaged southern nave will continue to be worked on during the upcoming campaign in 2024.

Two survey approaches were used to further the understanding of the architecture and infrastructure of the historic settlement. Firstly, the use of a photogrammetric drone survey provided detailed information on both the historic agricultural use of the surrounding area and the visible peripheral settlement features above the present ground level. Using the DoA's drone equipment, an area of approximately 10ha could be photogrammetrically surveyed. Combining this spatial dataset with the pre-existing layout of the core settlement (see Hamarneh and Leutgeb 2023), the first comprehensive map of Al Jumayl was produced. It consists of stone-built structures such as the tower, various buildings, boundary stones, walls dividing plots of land walls along *wadi* channels and dams, and rock-cut features such as cisterns and cave dwellings.

Second, consumer-grade LiDAR (iPhone 13 Pro) was used to survey most of the accessible sub-surface features identified by orthophotography in the area of interest. As a result, the condition of preservation of 16 out of 46 partially operational cisterns and 15 out of 21 only recently deserted cave dwellings were recorded.

Stratigraphy and Utilization Phases of the North Church

TL, MLL

Three excavation campaigns have been carried out in the double church complex since 2021. The interior of the north church (F04 and F05) was excavated down to the mosaic floor. In addition, a long trench (F06) was dug in 2023 to expose the presbytery and apse of the southern church.

Due to the different levels of exposure over the centuries, the two structures in the complex have very different levels of structural and archaeological integrity. The heavily disturbed southern church (F06, apse and presbytery) has not yet been fully excavated, although some phases have been identified.

The documentation of the north church (F04 and F05, presbytery and nave), with its well-preserved archaeological layers, allowed a preliminary subdivision into seven main phases of use and events.

Recent

The upper layers of debris SE F05_00 and SE F05_01 contained modern finds of plastic and aluminum and therefore seemed to be recent layers. In addition, an extensive looting hole SE F04_11 broke through all the archaeological layers in the easternmost part of the apse.

Mamluk/Ottoman

At some point in the Mamluk/Ottoman period, according to the pottery finds, a dry-stone wall was built on top of the collapsed church to create a living space inside the apse. The debris inside the apse was covered with a limestone floor. A doorway to the south is also indicated by a doorway hinge and threshold.

Collapse (Fig. 1)

Dating the collapse of the churches is a difficult task. Indeed, it is not even certain whether the collapse occurred all at once or over a longer period of time. The latest pottery sherds in the debris layers SE F05_02 and SE F05_76, which cover all the structural vault collapses, are of Mamluk origin. At the very least, the sequence of the collapses seems clear from the stratigraphic position of the fallen roof slabs and vault stones. Arches 2 and 4 collapsed first. The stone roof slabs fell at the same time and slid under still standing arches 1, 3 and 5. They then collapsed onto the stone roof slabs.

Abandonment after Fire

A widespread layer of charcoal and ash (SE F05_90), covering almost the entire nave, indicates a severe fire. The few Byzantine pottery sherds recovered are of no help in dating the event from a stratigraphic point of view. Charcoal samples have been taken but have not yet been analysed.

Abandonment/Erosion

Below the burnt layer, stone chips and fragments of lime mortar (SE F05_91) were identified over the excavated area.

The thickness of this layer increased considerably in close proximity to the church walls, effectively creating a concave shape. This may correspond to a period of wall surface erosion and probable abandonment of the building.

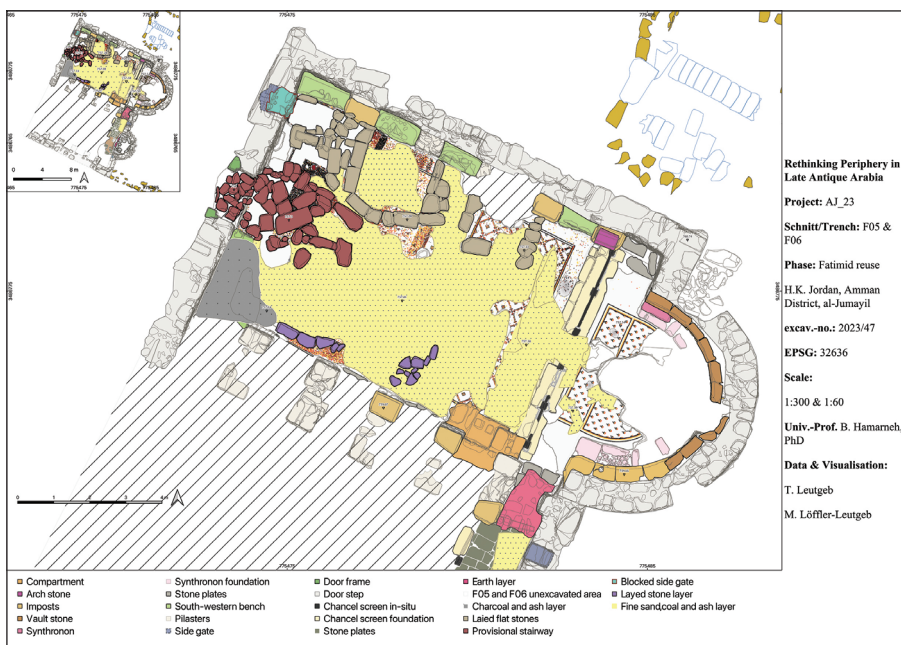
Fatimid/Abbasid Reuse (Fig. 2)

Covered by the erosion layer (SE F05_91), with a loosely laid stone structure. A dry-stone partition wall, organized in two superimposed rows, was used to block the side door in the west wall and the intercolumnar space between

the first pilaster and the east wall of the church. A temporary 1m high stone stairway/ramp from the central western entrance of the building led down to a flat walking level covered with a layer of fine sand, ash and charcoal (SE F05_92). Two single-layer structures of flat stone were set in a rectangular pattern against the north wall of the church. One of the structures contained a stone slab with a scratched crucifix. However, the scratched surface was facing downwards. Animal remains and fragments of a basalt millstone suggest a domestic re-use of the church building, possibly as a living space,



1. F05 plan of the collapsed arches.



2. F05 plan of the Fatimid/Abbasid re-use phase.

shelter and/or animal pen. Pottery sherds found in layer SE F05_92 are dated to the Byzantine, Fatimid and Abbasid periods.

Byzantine Use (Fig. 3)

The original layout of the nave seems to have undergone only one major mosaic alteration and some minor structural rearrangements. Nevertheless, three phases of use of the church can be distinguished.

The original layout of the nave is formed by the western, northern and eastern walls and the southern row of pillars. The northern pilasters and benches (SE F05_84, 86, 88), the chancel screen foundation, the *synthronon*, the stone paving and the stone thresholds in the intercolumnar areas were installed before the original mosaic floor (SE F05_57) was laid. This original mosaic is still intact to the east and west of the foundations of the chancel screen. At least one of the stone benches (SE F05_112) on the west wall was built directly on this mosaic floor. The original mosaic borders are partly covered by later plaster.

The mosaic floor in the western part appears to have been restored at a later date. Instead of the earlier design, large areas of black and red mosaic tesserae fill large areas. This mosaic frame follows architectural elements such as the previously applied wall plaster and the western stone bench.

In front of the south-west bench (SE F05_111) a footrest made of squared stones and mortar was built over the later mosaic.

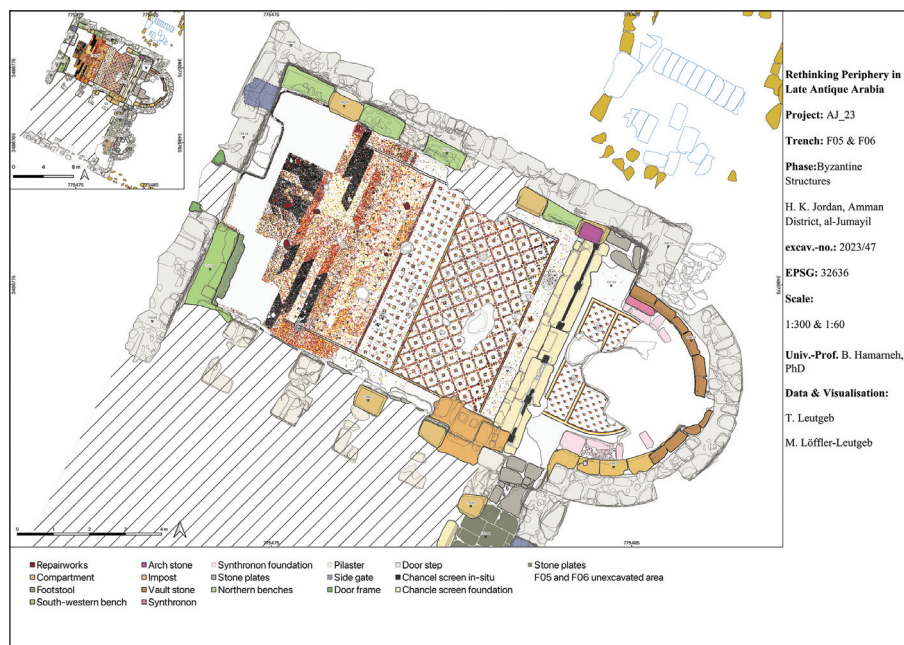
Architecture of the Church

MLL, LS

The church complex is about 258 square meters in size and is oriented axially east-west. Two adjacent churches make up the complex. Two doors are located in the western wall of the north church, while a 1935 photo by Savignac shows at least one other door in the south structure. The complex is integrated into a massive boundary wall to its south, while two apses of different size define the eastern side.

The church's northern outer wall is shared with another building complex; further research is needed to determine the precise structural relationship between these two complexes. The church's exterior walls are composed of well-dressed ashlar that come in a variety of sizes and shapes. The stones are meticulously interlocked at the corner sections. The church complex's two adjacent naves measure the same 7.9m in width and 11.2m in length. Five rows of double pillars divide the two naves. Five rows of pillars are also visible on the opposing faces of the northern and southern walls.

The main architectural features discovered during the 2021 and 2022 campaigns, such as niches, pillars, and pilasters, have already been



3. Plan of the original Byzantine church layout.

discussed in ADAJ 61 and 62. Benches and a single footrest were found during the recent excavation in the nave of the north church. Three of those benches were discovered in their original locations, each positioned in between the northern wall's pillars (2A–5A). They are directly in contact with the wall and the pillars, and are all plastered (SE F05_84, 86, 88). The substructure is composed of rubble stones (SE F05_125) and the plaster coating consists of three different layers. A white bottom layer with coarse inclusions is, topped by a second coarse layer with greyish-brown colour. The top layer is of smooth white plaster, with minimal inclusions. The three benches situated amidst the pillars seem to have been integrated into the church's construction.

Another bench (SE F05_112) is located in the southwest corner of the nave and features a footrest (SE F05_111). The latter is composed of rounded-edged, flat, rectangular stones that have been slightly worked. There are pieces of plaster still in place on the footrest and the bench. Although the mosaic encircles the edges of the bench (SE F05_112), which suggests that it is part of the original construction, it appears that the footrest was positioned above the mosaic floor at a later date.

The Mosaic (Fig. 4)

BH

After removing the later stone structures, and the last abandonment layers (SE F05_92, 98, and 99), the floor mosaic (SE F05_56) was fully exposed. Parts of this pavement had already been excavated in 2021 and 2022. The mosaic, which is entirely non-iconic, was made in different stages.

Due to the decorative style, the sections encompassing the presbyterium and the eastern portion of the nave (SE F05_56, up to roughly the middle) belong to the Byzantine period phase, probably to the last decade of the 6th century AD. This phase is distinguished by a geometric pattern composed of florets arranged diagonally. Such a pattern is well documented in the context of religious Christian buildings in the area. The closest parallels are the presbyterium of the church of Bishop Sergius, and the first phase of the church of St. Stephen both at Um er-Raṣāṣ (Piccirillo 1991: 333; Piccirillo

1993), but it also appears at Mādabā, KHirbat Al Mukhayyāt and Mount Nebo (Piccirillo 1993). From the middle to the western outer wall, the western section of the nave is covered in a mosaic that was probably altered later most probably in the 8th century AD (SE F05_157). Along the western wall, between the two doors (SE F05_120 and SE F05_155), small remnants of an earlier white tesserae paving are still preserved.

The last pattern in proximity of the west wall featured a design of red and black stripes with flowers around them. The coloured tesserae were arranged to conceal any remnants of the previous décor. This is a rare instance in the history of iconophobic floor changes in the area of Mādabā. The full remake of a mosaic floor is certainly uncommon, one of the best documented cases being that of the church of the Theotokos in Mādabā (Piccirillo 1993).

A number of small to medium-sized holes (IF² F05_100–104, 107, 108, 110, 121–123, 133–136, 138, 144–149, 153, 154, and 156) as well as some repair work, filled up with tesserae, pottery, and worked stones (SE F05_105, 106, 109, 129–132, 137, 139, 143, and 152) can be seen throughout the entire area. The pavement substructure SE F05_141 and the mortar bed for the tesserae, SE F05_140, are visible due to the depth of IF F05_100 (medium sized breakthrough). This damage can be assigned either to the collapse of the heavy roof's or as signs of wear and tear; none seems to have been intentionally inflicted.

Chancel Barriers (Fig. 5)

LS

During this season, some pieces of worked oil shale were discovered in both the F05 and F06 trenches. Trench F05 held a few of these pieces that are possibly part of the original church's channel barriers. Six fragments (J23S-V/91-02) that are part of a larger piece were discovered in SE F05_91. Twenty more tiny pieces of a stone plate made of oil shale were found in SE F05_92 (J23S-V/92-02). These are unadorned fragments of a barrier, marginally less fragmented than the pieces from (J23S-V/91-02). Despite their preservation status, the pieces all have comparable widths and exhibit surface smoothing as signs of processing.

2. IF = Interface.

Within the southern church's apse and presbytery (F06), two different elements of chancel screens was found. The fragments of (J23S-VI/06-01) were situated in a secondary context, arranged in the presbytery pavement; decorated side facing upwards, while the second element, (J23S-VI/06-02) was found outside

the north corner of the apse, also used as part of the pavement decorated side facing down. The second fragment was only partially decorated and was not finished. (J23S-VI/06-01) is decorated with a *cross pattée* inside a circle.

This motif can be seen throughout the region, as for example in chancel screens at the church of



4. Mosaic of the northern church nave.

the Lions in Um er-Raṣās (Piccirillo 2003: 298, fig. 9; Michel 2001). Rather than using oil shale, the panels could instead be made of marble. (Piccirillo 1992: 205-208: fig. 5). The banded circle around the cross could be a simplified depiction of a wreath. This wreath is visible in a lot of other compared panels, coming, for example, from *Palaestina Prima* and *Tertia* and probably dating earlier than the panels from Al Jumayl and Um er-Raṣās. One example with a wreath instead of a banded circle is in the Monastery of the Lady Mary in Baysan (Bet She'an) or in 'Awjat Al Ḥafīr (Nessana) from the north church (Habas: 2000 124-125, fig. 67 and 68).

The Pottery of F05 (Fig. 6)

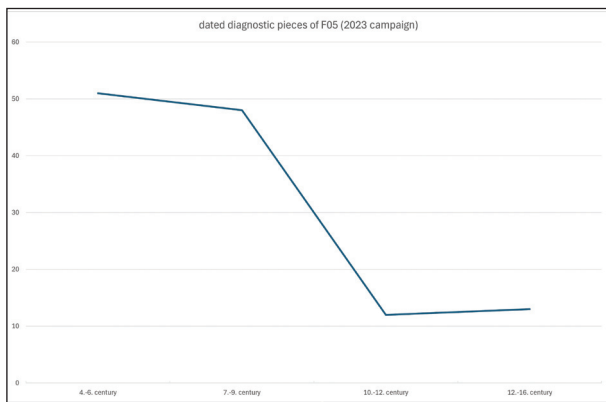
BH, FM, MLL

The 2023 excavation campaign yielded a substantial number of finds, particularly pottery sherds, despite the fact that the total quantity of sherds recovered was considerably less than in the two preceding campaigns. It was noted that certain strata had significantly more discoveries than others, similar to what was observed in the earlier excavation campaigns.

Since the most recent surface layers in



5. Drawings of the chancel barriers.



6. Pottery statistic of F05 of the 2023 campaign.

section F05 had already been removed in the 2022 campaign, the Mamluk period was already represented in the first stratigraphic units uncovered in the 2023 work. Here, SE F05_02 was one of the most important layers, yielding a total of 64 sherds. Of these, about one-third could be dated; most were from the Mamluk, Byzantine, and Abbasid periods. Additionally, SE F05_76 dates to the Mamluk period. Of the 31 sherds that were gathered, seven were dated: two were Mamluk and five were Byzantine.

The first burnt layer, SE F05_90, which contained late Roman and Byzantine sherds, came after the Mamluk utilization level. A layer of chalk and mortar (SE F05_91) followed by one of yellow earth and sand (SE F05_92), which produced 120 and 73 sherds, respectively, followed this first burnt stratum. Byzantine, Umayyad, Abbasid, and Late Roman eras make up the vast bulk of these. Additionally, one Fatimid sherd from SE F05_91 is present. Conversely, SE F05_94, 97, 98, and 111 have comparatively few sherds in each, making them relatively poor in finds. The ones that could be chronologically dated were from the Umayyad and Byzantine periods. 33 Thirty-three sherds found in a further burnt layer (SE F05_99) can be dated to the Nabatean, Byzantine, Umayyad, and Abbasid periods.

SE F05_02 (Fig. 7)

KK

(SE_F05_02) contained a total of 25 diagnostic pottery pieces that can be dated from Roman-Byzantine times into the Mamluk period. Shown in (Fig. 2) are three diagnostic pieces that reflect different types of storage vessels.

(J23-V/02-03) is essentially a grey-black core bowl base that has not fully fired. The exterior features burnt patches and traces of sinter, with a colour ranging from orange to light brown. Brownish beige with noticeable orange and white particles can be seen inside the bowl. Open storage vessels of this type were extremely common. The light -orange material used to make these bowls is bare and unglazed. Similar Mamluk wares made from orange-brown clay have identified in other excavations in Historic Palestine (Avisar and Stern: 2005, fig. 4, 5).

(J23-V/02-06), the second sherd in this selection, is Mamluk period in date. This

bowl's rim piece has a moderate level of firing. The interior is light beige with a faint hint of yellow, while the exterior is a creamy tan with dark brown wave-like patterns. Additionally distinctive to the interior are reddish-brown geometric decorations in the form of flat semi-spirals. Rujm Al Kursī and Tall Ar Rās are also known to have similar geometric motives (Stern 1999: fig. 52; Khadija 1990: fig. 29).

The last piece from SE F05_02 is a thick rim piece (J23-V/02-17) from an amphora. The dating can be set in the Late Byzantine or early Umayyad period. The piece was well fired and consists of rather rough, coarse ware. Its outside colour is brownish and shows indications of fire

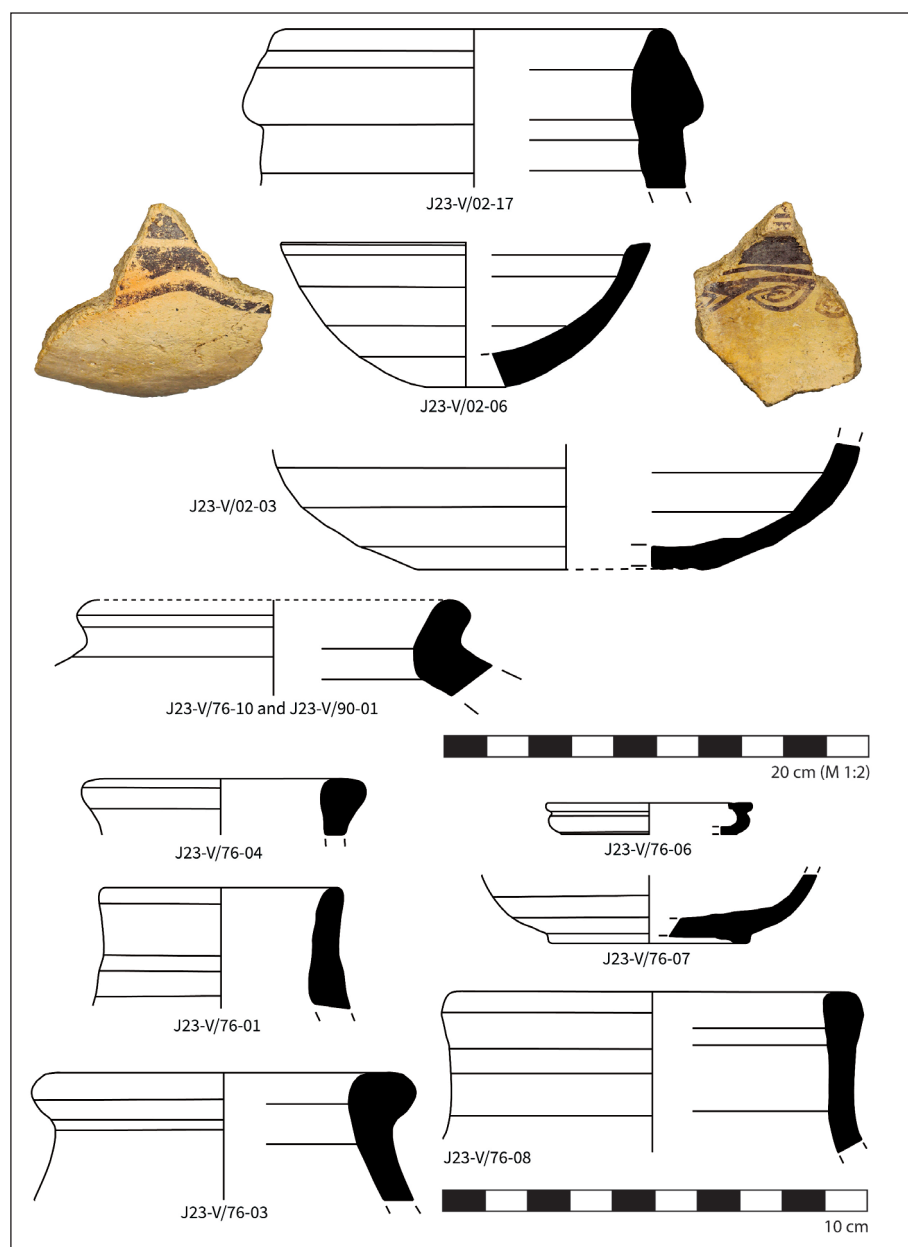
exposure. Parallel vessels from this period can be found in the “Tabula Ansata” Church at Um er-Raṣāṣ (Piccirillo 2003: 310, fig. 18, 322, fig. 30) or in the finds in the northwestern parts of the Shefala in Historic Palestine (De Vincenz 2015: fig. 5.2.5, 5.2.6).

SE F05_76 (Fig. 7)

AA

The finds of SE F05_76 allowed the identification of ten ceramic fragments that can be dated to the Roman, Byzantine, Ayyubid, and Mamluk periods.

Among the selection of this stratum is (J23-V/76-01), identified as a rim fragment



7. Pottery fragments of SE F05-02+76.

from a ceramic bowl that has orange-brown colour with darker, burnt spots. The interior of this fragment presents a smooth surface and is medium-well fired. The piece is assigned to the Roman-Byzantine period. Comparisons can be found in Um er-Raṣās at the “Tabula Ansata” Church (Piccirillo 2003: 312, fig. 20, 316, fig. 24) as well as in the Tyropoeon Valley Jerusalem (De Vincenz 2020: fig. 3.8:11).

(J23-V/76-06 and -08) are rim pieces of amphorae from the Byzantine period, both medium to well fired. J23-V/76-06 displays a smooth grey surface, light sinter, grey edges, and a lighter core. In contrast, J23-V/76-08 shows a greyish-brown surface with a rough texture, along with pale beige edges and core. Comparable pieces can be found at Mount Nebo and Um er-Raṣās (Hamarneh and Bianchi 2021: S_30015; Alliata 1992: 411, fig. 19).

The plate fragment (J23-V/76-07) is a base. It is well-fired, exhibiting a pale orange colour with noticeable light sinter inclusions and minor grey specks. It is possibly an imitation of African Red Slip Ware (Dark 2001: fig. 51, A, B).

(J23-V/76-10) (and J23-V/90-01), is the rim of a dolium, dating to the Late Roman or Byzantine period. The exterior is characterized by a pale orange colour with dark sinter and a rough texture. It has been medium fired, and its interior features a pale to medium orange shade with visible white and grey inclusions, along with a rough texture. Comparable vessels dating to the middle Byzantine period can be found close by at Um er-Raṣās and throughout the whole Mediterranean area (Pappalardo 2006: 392, fig. 2; Alliata 1992: 235, fig. 7.1; Lafli and Sahin 2015: fig. 14.119; De Vincenz 2015: fig. 5.3.17).

The fragment (J23-V/76-03), a further rim section of a ceramic bowl, showcases a thick, pale beige finish with a smooth exterior, and can be classified as “pale ware”. Comparable pieces such as this can be found at Um er-Raṣās (Piccirillo 2003: 313, fig. 21). The form, thickness, and colour of this rim also resemble fragments found in southwestern Paphlagonia (Lafli and Sahin 2015: fig. 3.41). The dating of these samples falls within the late 8th to early 9th Century AD.

Noteworthy is (J23-V/76-04), which is part

of either a bowl or a cooking pot from the Ayyubid-Mamluk period. This grey sherd is well fired, featuring a smooth external glazed surface contrasted by a rougher glazed interior with small, perceptible inclusions. The glazing consists of a dark green base, with dark red to black patches, probably resulting from the use of the vessel. A comparable rim from a cooking pot has been discovered in Historic Palestine at Tall Ar Rās (Stern 1999: fig. 38).

SE F05_90 (Fig. 8)

KK

Three Roman and Byzantine diagnostic pieces were found in SE F05_90. (J23-V/90-01) dates to the Late Roman or Byzantine period and is a thick rim piece of a dolium. The piece fits together with (J23-V/76-10). The form and thickness of the dolium rim resembles “hole mouth jars” and regional parallels can be found in Um er-Raṣās and Historic Palestine (Pappalardo 2006: 392, fig. 2; Alliata 1992: 235; De Vincenz 2015: fig. 5.3.17).

(J23-V/90-03), the second piece from this stratum, is the base of a shallow Byzantine-style bowl. This piece has dark patches all over it due to the sherd’s granular orange-brown exterior which is covered by large, burned areas. There are no remaining signs of glazing, but there are signs of light sinter and a rough surface. The interior side still has some fibre markings, grey sinter, and a brown and orange coloration. This piece appears to have been either African Red Slip Ware (Dark 2001: fig. 51.E), Phoenician Red Slip Ware (De Vincenz 2015 Fig. 5.5.7, 5.14.4), or an imitation of one of those due to its discoloration from fire exposure and its granular component.

SE F05_91 (Figs. 8 – 10)

SG, KG, MS, CW

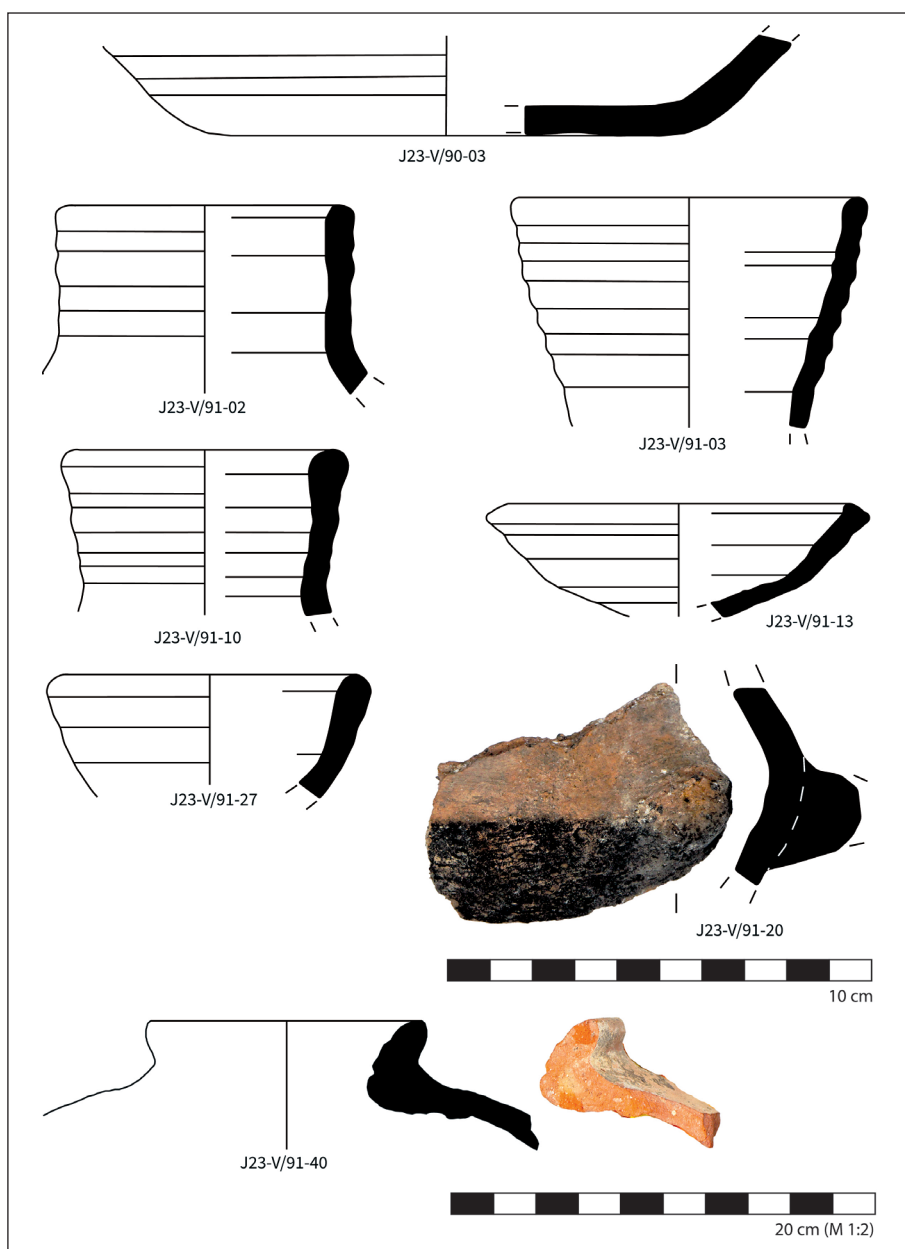
In SE F05_91, 44 diagnostic and 75 non-diagnostic pottery pieces have been discovered. While the bulk of these artefacts are Byzantine in origin, some also date to the Roman, Umayyad, Abbasid, and Fatimid periods. Most of the pottery is classified as table and cooking ware, while some pieces are classified as commercial ware and feature a range of plates, jars, and cooking pots. (J23-V/91-40) is a rim of a Roman dolium with a rough surface

on both sides and only small inclusions: its colour is orange in the core and there is a pale orange coat on the outside of the storage jar. On the inside of the dolium shallow imprints of fingers are preserved (Pappalardo 2006: 392, fig. 2; Alliata 1992: 235; Lafli and Sahin 2015: fig. 14.119; De Vincenz 2015: fig. 5.3.17). Sherds (J23-V/91-02) and (J23-V/91-10) do not fit together but display the same material, thickness, and decoration. Both are medium fired and have a dark grey core with pale edges, showing small inclusions. The rough surface of the outside displays a dark grey colour with patches of a light orange undercoat covered with light sinter. The horizontally running

parallel-line decoration of elevations and depressions along the outside, can be seen on Byzantine flasks or jars. Comparisons of this decoration are wide spread and can be found at the Reliquary Church and the “Tabula Ansata” Church at Um er-Raṣās (Pappalardo 2006: 392, fig. 2, Piccirillo 2003: 312, fig. 20; Armstrong 1993: 323, 324, fig. 16.274, 16.275).

(J23-V/91-03) is a well fired rim made of pale orange clay with small white inclusions, covered in light sinter. The outside is decorated with horizontally parallel running lines like (J23-V/91-02/10).

The outside is further characterized by a rough surface, while the interior of the sherd



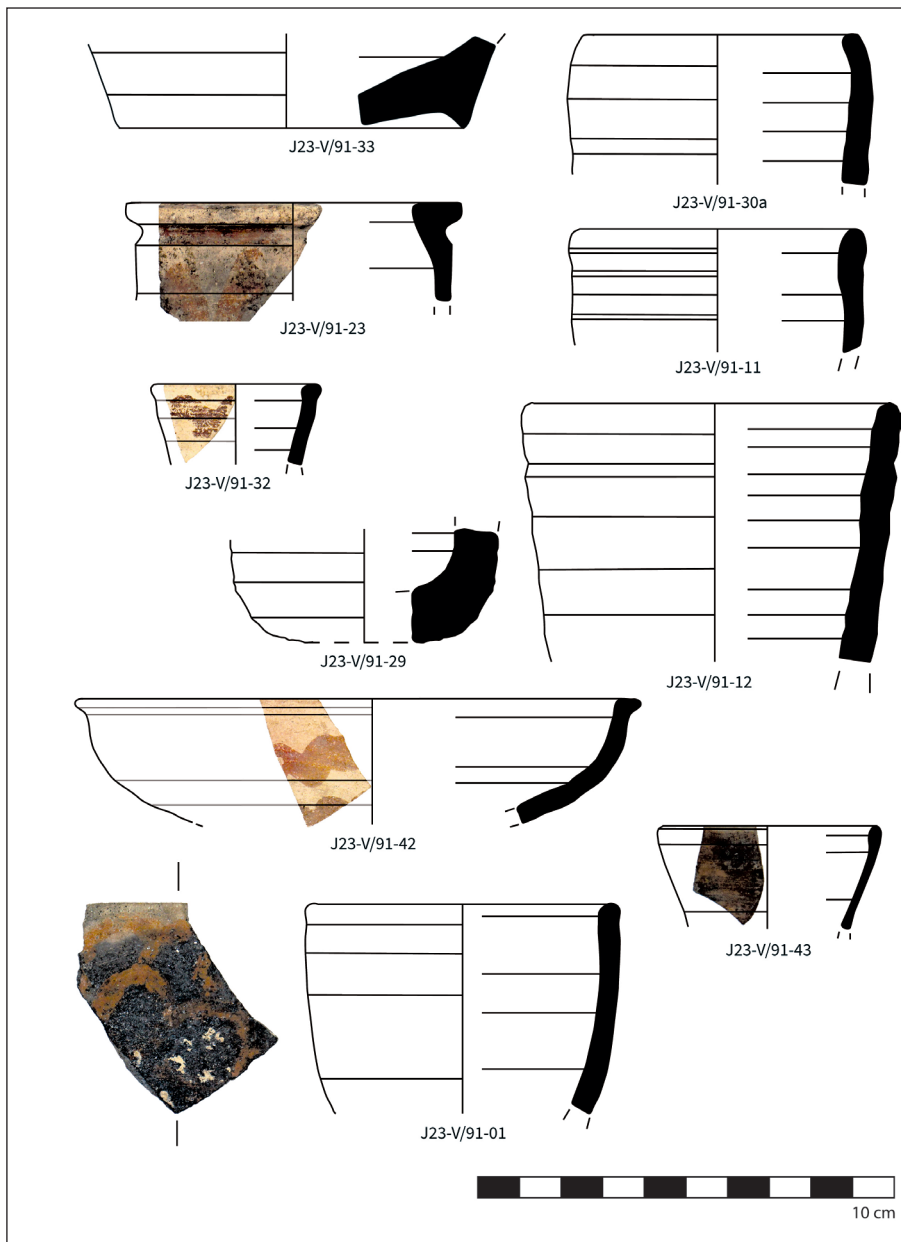
8. Pottery fragments of SE F05-90+91.

is smoothed. similar pieces can be found from the Byzantine (Catling 1972: 9, 13, fig. 5.169) and early Umayyad periods (Niamir 1999: 47-49, fig. 4.5 Boas 1992: 160, 161, fig. 74.7). Parallels, dating to this transformation period can also be found in Um er-Rasās (Piccirillo 2003: 319, fig. 27).

Several fragments of Byzantine cooking pots and one lid were found in SE 91, among them the rim pieces (J23-V/91-13) (lid rim) and (J23-V/91-27) (rim) and a wall fragment with handle (J23-V/91-20). The clay of (J23-V/91-13) is of a grey colour, showing black patches and traces of sinter outside and inside. On the outside additional parallel lines can be

noticed. The material is well burnt and displays small white to greyish inclusions. Parallels are known for example from the Reliquary Church (Pappalardo 2006, 393, fig. 3) Meanwhile (J23-V/91-20) and (J23-V/91-27) are made of orange clay with pale edges and a darker core, both are not well fired and show traces of black patches on the outside.

(J23-V/91-20) shows light inclusions and a few medium-sized air bubbles. The rough exterior surface displays light sinter and a large burnt area: the orange interior surface is smooth with light inclusions. Parallels for the cooking pot with handle can be found at the “Tabula Ansata” Church and at Nitil (Piccirillo 2003:



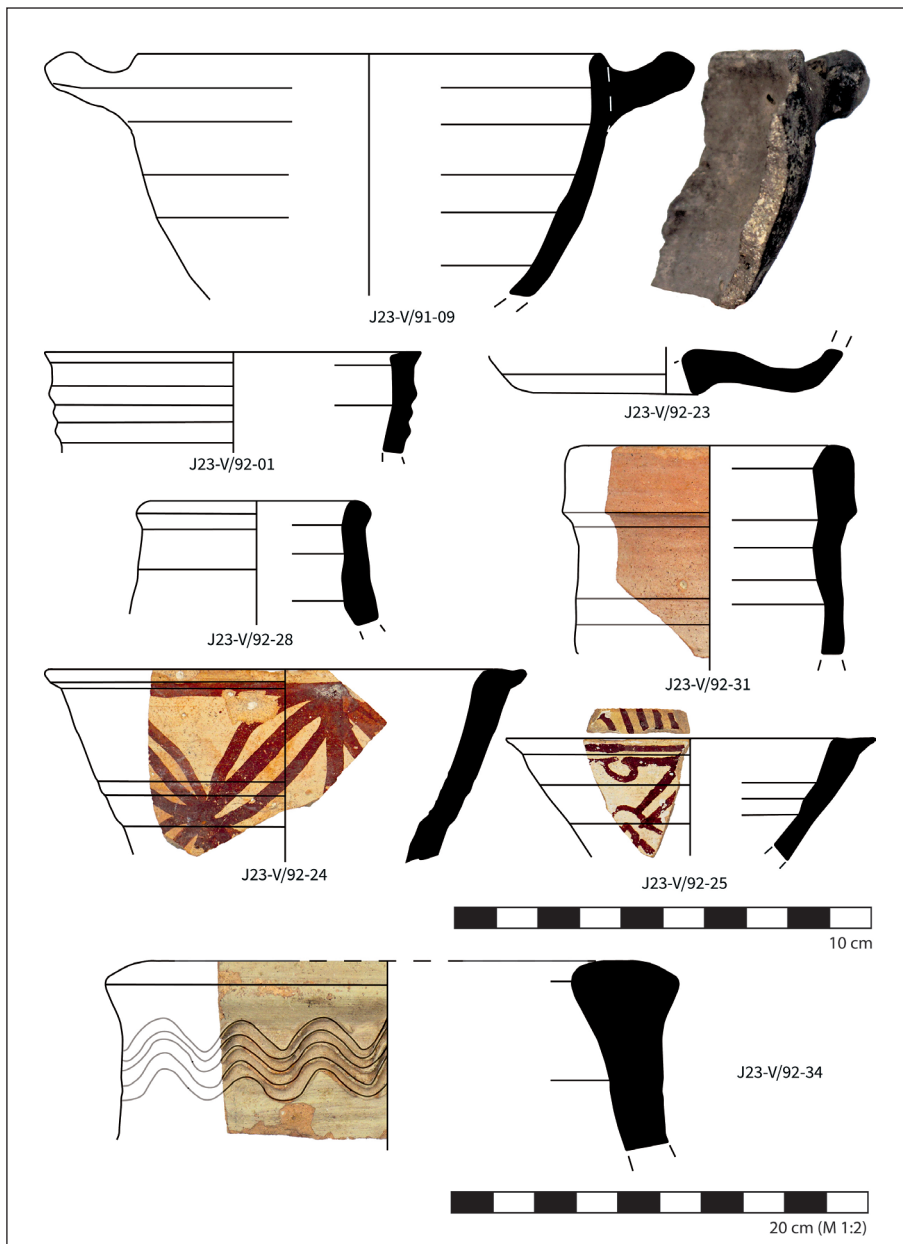
9. Pottery fragments of SE F05-91.

310, fig. 18, Hamarneh 2006, 441, fig. 15). J23-V/91-27 is also of low quality, showing larger inclusions of other material and air. Pieces similar to this have been found at the south court of the Saint Paul Church at Um er-Raṣās (Pappalardo 2002: 434, fig. 36).

Two possible further pieces of cooking ware dating back to Byzantine time and featuring with burnt areas on the exterior, are (J23-V/91-33) possibly used as a cooking pot due to its form, and (J23-V/91-30a). Both have a dark greyish-brown colour, while the cooking pot has an orange core and a second that is entirely greyish all over and has a smoother surface (J23-V/91-30a). Parallels can be found at the south court

of St Paul's church and the "Tabula Ansata" church both at Um er-Raṣās (Pappalardo 2002: 422, fig. 27; Piccirillo: 314, fig. 22).

(J23-V/91-23) is the rim of a hemispherical bowl dating to the Byzantine to Umayyad period. Parallels to this piece can be seen in pottery of Um er-Raṣās and Jarash (Alliata 1992: 233, fig. 5; Pappalardo 2002: 432, fig. 34; Parker 2022: 81, fig. 4.20; Walker 2012: 513, fig. 4.2, 14). While displaying grey sinter, its beige-brown, smooth outside shows traces of reddish slip. The equally smooth inside might have been burnt; the surface is beige and includes dark sinter. The well-fired clay has greyish-beige edges and a darker core without



10. Pottery fragments of SE F05-91+92.

containing any inclusions.

The rim of a bowl, (J23-V/91-11), is identical inside and out; it has smooth surfaces of a creamy beige colour with small brown and grey inclusions and is well fired. Similarities can be found in other storage vessels, from the region dating to the Byzantine to Abbasid period (Piccirillo 2003: 306, fig. 15, 308, fig. 16;) including and from *Hisbān* (Walker 2012: 533-535, fig. 4.10:21).

(J23-V/91-32) is a well fired rim fragment. Both the edges and the core are beige: small white inclusions are visible. The inside of the sherd has a smooth, pale beige colour: parallel lines and tiny grey inclusions are visible. The outside has a smooth surface and pale beige colour as well, and an irregular, wave-shaped dark brown/reddish painted pattern is partly visible. The upper part of the pattern follows a regular wavy line, but the lower part differs. The dating can be placed between the Umayyad and Abbasid periods (Pappalardo 2002: 410, fig. 18, 434, fig. 36; Daviau and Beckmann 1994: fig. 3.12., (Fig. 4.6).

A further piece dating to the Abbasid period is (J23-V/91-12), a well fired rim piece that, displays orange edges and a greyish core with light and dark inclusions. Pronounced sinter and orange markings, possibly traces of glazing, can be seen on the smooth, pale beige exterior. Comparisons from the Abbasid period can be found at *Um er-Raṣās* and *Al Muwaqqar* (Piccirillo 2003: 310, fig. 18; Najjar 1989: 317, fig. 9.34).

The two sherds, (J23-V/91-29 and J23-V/91-42), can be dated to Abbasid period, one of them being a fragment of an open drinking vessel (J23-V/91-29, *Alliata* 1992: 245, fig.12). The clay is pale beige on the outer and inner side, with a rough surface and many inclusions. The second piece belongs to the rim of a wide, open vessel, possibly a bowl (J23-V/91-42). The surface is smooth with an orange and light-grey base and reddish-brown wavy lines on the outside. The core is of similar beige colour, has few inclusions, and is well fired. (Piccirillo 2003: 131, fig. 21; Pappalardo 2002: 411, fig. 19; Hamarneh 2006: 446, fig. 17)

The first Fatimid sherd of this sample is (J23-V/91-01), the rim of a small bowl or jug. The material is internally and externally grey,

with small inclusions and some burnt patches on the outside. Along the rim, the piece has red markings, that resemble fish scales and are drawn in a dark red-brownish colour. Pieces with similar decoration dating to the Abbasid Fatimid period are, for example, found at *Tall Hisbān* (Walker 2012: 542, 544, fig. 4.13:14).

(J23-V/91-09) is a medium-fired rim and handle of a Fatimid hemispherical bowl with a large opening. It is made out of grey clay, the edges being darker than the core and containing tiny air bubbles. The outside is smooth to the touch and slightly burnt, whereas the inside shows a few burnt patches with visible inclusions. A parallel in form can be found in a Fatimid casserole at *Hisbān* (Walker 2012: 542, 545, fig. 4.13:30).

The last sherd is a rim of a vessel (J23-V/91-43). The outside is dark grey with black-brownish patches and a smooth surface. The inside is similarly dark as well, as is the core of the clay, with no visible inclusions. well-fired it can be dated to Fatimid times.

SE 92 (Fig. 10)

SG

The yellow earth -and- sand layer, SE F05_92, contained 34 pieces of diagnostic pottery, dating from the Late Roman-Byzantine to the Abbasid period.

Piece (J23-V/92-01) is the rim of an open storage vessel or bowl. The core is grey with light inclusions, the edges are brown, and the sherd is well fired. Both the outside and the inside are of a greyish brown colour with light sinter and small light inclusions. There are textured horizontal parallel lines on the outside of the vessel. The sherd can be dated to the Byzantine period and parallels can be found throughout the region (Pappalardo 2006: 393, fig. 3; Vincenz 2020: fig. 3.14.8).

(J23-V/92-23) is a well -fired base piece. The outer edge is dark grey, the inner edge is light grey, and there are small light inclusions visible. Both the outside and the inside have as bluish grey surface with dark reddish sinter or residue. The piece seems to be the bottom part of a jug or juglet and can be dated to the Byzantine period. A similar vessel can be for example found at *Tall Mādabā* (Foran 2022: 86, fig. 3).

(J23-V/92-28) is a rim of a cooking pot. The inner edge is black, the outer is grey beige with light inclusions and tiny air bubbles, and the piece is medium fired. Both the outside and inside of the sherd have a colour with a brownish beige undertone, and display burnt patches on the surface. The piece can be dated to the Late Roman or Byzantine period (for parallels see: Piccirillo 2003: 319, fig. 27; Vincenz 2020: fig.16.18).

The (J23-V/92-31) is a rim piece of an amphora. The edges are pale, the core is dark beige: tiny air bubbles and tiny grey and white inclusions are visible. The sherd is well fired. The surface of the outside is smooth, pale orange in colour with light sinter and visible grey and white inclusions. The piece is dated to the Late Roman/Early Byzantine period (Pappalardo 2006: 393, fig. 3; Piccirillo 2003: 306, fig. 15, 322, fig. 30; Foran 2022: Fig. 3.2., 3.3).

The rim (J23-V/92-24) pertains to an open storage vessel. The edges are pale, the core is dark beige with medium- sized air bubbles; and small white to grey inclusions. The piece is very well fired. The inside has also a smooth, surface and a pale beige colour: tiny inclusions are visible as well. The outside has a smooth pale beige surface with a dark brown-reddish floral- pattern painted decoration. The pattern shows the upper and right sides of a square with the remains of a four-petalled flower. The petals are formed by three lines each. The sherd shows stylistic similarities to a piece published by Alan Walmsley (Walmsley 2022: fig. 121; Haron and Clark 2022: fig 122), which suggests a date between the 9th and 10th centuries, either the Abbasid or early Fatimid period.

The sherd (J23-V/92-25) is also a rim piece of a large open storage vessel. The piece is medium fired, the edges are pale, the core is orange, and grey and white inclusions are visible. The inside is smooth with traces of sinter: tiny inclusions are visible. The external surface is smooth, and pale beige in colour . Below the rim are two horizontal lines, the lower one interrupted by a semicircle extending inwards. This piece finds parallels in the pottery published by Walmsley (see Walmsley 2022: fig. 122; Haron and Clark 2022: fig 122), allowing the piece to be dated between the 9th and 10th centuries, similar to (J23-V/92-24 and J23-V/99-09). Parallels from

the region can be found at several places such as Um er-Raṣās and Nitil (Hamarnah 2006: 437-446, fig. 12-16; Piccirillo 2003: 313-319, fig. 21-27; Pappalardo 2002: 413, fig. 20; Alliata 1992, 239, fig. 9).

(J23-V/92-34) is a rim of a well-fired open storage vessel. The core of the piece is dark beige: the edges are orange with light inclusions. The inside is pale orange with light sinter, small grey and white inclusions are visible, and the surface is smooth. The outside is cream beige with grey and brown inclusions: on the smooth surface, four textured wavy lines are visible underneath each other. The dating can be placed in the late 7th/8th century AD to the Umayyad or Abbasid period, based on a comparative example (Piccirillo 2003: 308, fig. 16, Sanmori and Pappalardo 1997: fig. 12; Walmsley 2022: fig. 35.).

SE FE05_98 (Fig. 11)

AA

One diagnostic fragment was recovered from stratum SE F05_98: a rim of a cooking pot, (**J23-V/98-01**), dating to the Roman - Byzantine period. The piece is heavily burnt on the inside and outside, having a dark grey-black core. The material is rough, with medium sized inclusions. It shows evidence of exposure to fire on its roughly textured exterior and lighter sinter, while the inner surface, is smoother. This fragment is characterized by its black edges and core, and it has undergone medium firing. The form of this cooking vessel is comparable to the Byzantine table ware found in Kadmeia (Armstrong 1980: fig. 16.274).

SE F05_99 (Fig. 11)

KK

In SE F05_99 ten diagnostic fragments (most of them Byzantine house and cooking wares, but also Nabatean and Abbasid fine ware) were found

The first piece in the sample shown here is, (J23-V/99-08), a Nabatean plate. This sherd was part of a rather large plate or shallow bowl with a slightly outturned rim. The inside is orange and decorated with a slightly darker motive of uneven parallel lines. Nabatean shallow plates and dishes with out-turned rims and mainly reddish slip that sometimes turns into a darker

red have been, found in Petra (Schmid 1995: fig 1.5-1.7).

(J23-V/99-03) is a rim piece of a Byzantine cooking vessel, with burned patches. It is medium-well fired, and the rim is an irregular wave-like form. Similar sherds of dark grey domestic wares are comparable to miscellaneous coarse vessel fragments and a casserole from the middle Byzantine period can be found throughout the region (for example Piccirillo 2003: 319, fig. 27; Pappalardo 2002: 427, fig. 30)

Sherd (J23-V/99-09) can be dated to the Abbasid period and is also a rim sherd of fine ceramic ware. The external side of this fine bowl sherd is characterized by a light cream colour and dark reddish brown painted decorations. The geometric motive features rhomboid line fields with a smaller notched rhomboid form in the centre and a triangular form above it with a curved hook formation in the middle. The rim itself is painted as well, and has an auburn single-wave motive. A bowl from Rujm Al Kursi shows comparable triangular painted designs on a light cream vessel (Haron and Clark 2022, fig 122). The piece also shows similarities to (J23-V/92-24 and J23-V/92-25) (Hamarneh 2006: 437-446, fig. 12-16; Piccirillo 2003: 313-

319, fig. 21-27; Pappalardo 2002: 413, fig. 20; Alliata 1992, 239: fig. 9).

Small Finds from the North Church

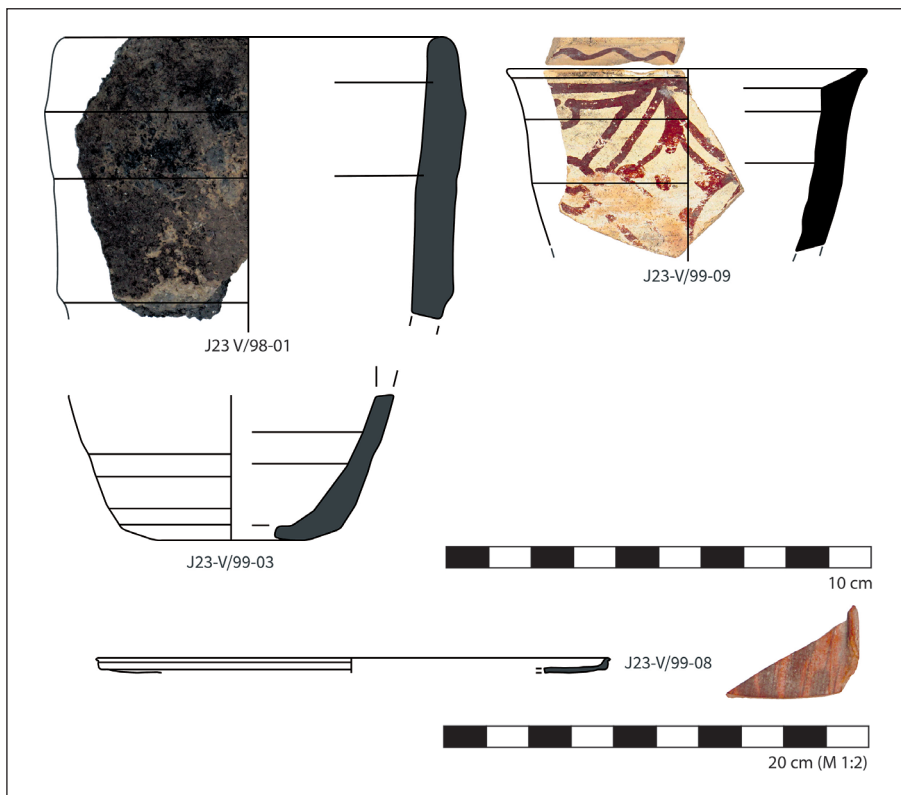
AA, SG, KG, ID, KK, MS, CW

Throughout the campaign several other finds of different categories could be unearthed, documented and partly dated. They offer further insight into the utilization phases of the church throughout time.

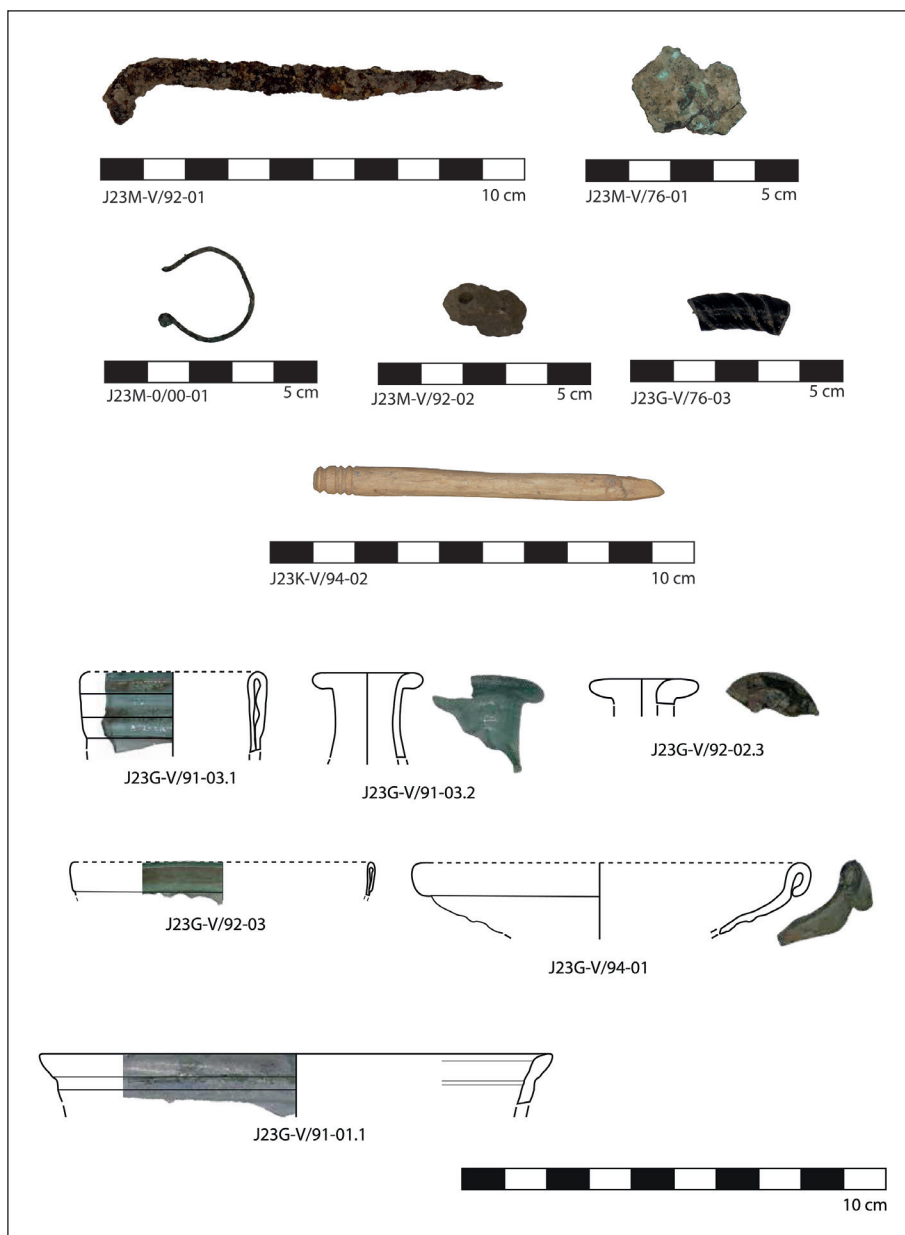
Archaeozoological Finds and Bone Pin/Tool (Fig. 12)

KS

A wide variety of faunal remains were discovered in the 2023 season, including the remains of goats, sheep, and other types of mammals, as well as cattle, mice, and domesticated dogs. Furthermore, about 20% of the total species count can be attributed to avians such as pheasants and fowl. The most common type is the chicken (*Gallus domesticus*), followed by Phasianidae: common quail (*Coturnix coturnix*) and/or the more locally plausible sand partridge (*Ammoperdix heyi*), as well as molluscs of both terrestrial and oceanic origin, are included in the recovered finds. There are about 414 fragments in all,



11. Pottery fragments of SE F05-98+99.



12. Small finds of various materials.

with the most common types appearing to be the osteological remains of the long bones of the legs, several fragments of the scapulae, different spinal vertebrae, and well preserved mandibulae of sheep or goat. Cut marks and burned patches are much more frequently found throughout the various sets of samples, in contrast to the findings from the previous two seasons. Throughout the Late Antique and Early Islamic periods, the quantity of large, assumed cattle bones decreases, which may be a sign of decreased consumption during this time due to a shift in dietary preference.

Out of all the osteological finds, a peculiar object stands out. (J23K-V/94-02), found in

stratum SE F05_94, in the western most corner of the church, near the entry, is a small piece of worked bone. It is assumed to be of domestic private origin due to its possible function, as well as its clearly worked and used shape. The fragment measures 8cm in length and roughly 0.5cm in diameter, and is broken in its lower part. The shape can be described as cylindrical in general, but, both the ends and the central part of the fragment lessen slightly in diameter. The central depression on the bone object and its general highly smoothed surface were most likely caused by regular and intense usage and handling. There is no visible trace of pigmented decoration. Besides all this, the upper part is

visibly marked with 5 grooves of different width in an irregular order. The lower end of the object appears in a conical shape. Possible interpretations of the object are usage as a hair pin, as a stylus for writing and carving, or as a textile-working needle or spindle. Hair pins of bones have been found at Um er-Raṣāṣ as grave goods (Pappalardo 2006: tavv. 16, Foto 3; Alliata 1992: 381, fig. 9), although this object is more rejuvenating towards the tip. Due to its size and the carved grooves and ridges along the upper end, an interpretation as textile spindle seems more plausible. The closest parallel was found at Tall Ḥisbān (Platt and Ray Jr.: fig. 11.1 and 11.2).

Metal Finds (Fig. 12)

ID

A combined total of around six metal nails and fragments were discovered in the excavation (SE F05_76, 91, 92, 99, 114). The nails show significant corrosion, suggesting the presence of iron due to rust discoloration. Their sizes vary, ranging from 2×4 cm to the largest measuring 8×0,5 cm. (J23M-V/92-01) a nail with a curved

head has equivalents in Um er-Raṣāṣ and Tall Ḥisbān (Alliata 1992: 231, fig. 4.2; Ray 1995: 154 pl. 10.2; McDaniel 2006). Additionally, there is a single indeterminate metal fragment (J23M-V/76-01) which appears to be copper, as indicated by the presence of a greenish patina.

Jewelry (Fig. 12)

The extremely simple bronze earring (J23M-00-01) is a surface find: it has a simple loop ending with a hook. Such Byzantine earrings have been found in funerary contexts (see Pappalardo 2006: 397, fig. 6; Platt 2009: 268, fig. 13).

A small stone pendant (1×2cm) with a loophole (J23M-V/92-02) and light grey coloration was found. A similar item was found at the Reliquary Church at Um er-Raṣāṣ (Pappalardo 2006: 397, fig. 6). J23G-V/76-03 is a fragment of a twisted glass bracelet (measuring 2.5×0.7cm) similar bracelets are dated to the Umayyad period (Platt 2009: 284, fig. 13).

Millstone and Grindstone (Fig. 13)

ID

Twenty-four basalt millstone fragments were found during the campaign. They vary in size, and indicate that activities such as crushing or grinding cereal crops were among the common activities in the village (McDaniel 2006). The millstone fragments were found in secondary deposit contexts.

Two types of querns have been identified: animal-operated (Type 002) and rotary hand-operated (Type 003), crafted from vesicular basalt (following the classification of Parton 2013, 303).

(J23S-V/02-01 and J23S-V/92-03), are cone-shaped *metae*. The flat, wide lower rubbing stone, is conical in shape towards the top middle, as can be seen in examples from Tall Ḥisbān (Kotter and Ray 2009: 116, 117, 120, fig. 9.3, 9.4, 9.8). The surface is rough, and the dimensions are 3,5-6×5,5cm (J23S-V/02-01) and 15×14×12cm (J23S-V/92-03). The lower cone part (J23S-V/92-03) fits perfectly into the upper piece, (J23S-V/99-01).

(J23S-V/99-01) is a Type 003, wheel-shaped grindstone, that measures 34,5×12×4cm. Parallels of complete mills and wheel-shaped grind stones can also be seen at Tall Ḥisbān



13. Stone objects.

(Kotter and Ray 2009: 114, fig. 9.1). The grindstone (J23S-VI/06-02) was found within the backfill of a looting hole and retrieved from the southern section of the apse (F06), beneath the floor level. It measures 38,5×28×9-19cm in size (Kotter and Ray 2009: 115, fig. 9.2).

Glass Finds - Vessel Fragments (Fig. 12)

KS

Several fragments of Byzantine and Early Islamic glass of various vessel types have been uncovered. Most fragments appear in the shape of outwardly curved rims, slightly curved bottoms and rotund neck fragments. The vessels that can be reconstructed seem to be either small glass lamps or similar vessels used as illumination devices, or alabastron like flasks. The most prominent feature besides their shape is their colour which includes a broad span of hues: blue, green, turquoise, grey and white. The glass material is of fine quality with a smooth surface and only minor inclusion of air bubbles.

Additionally, there is a range of several sizes of small glass handles, mostly belonging to glass lamps, that was uncovered in church. Similar vessels have been identified in several churches of Um er-Raṣāṣ (see Alliata 1991: 370, 398, 401 413; Alliata 1992: 231)

Reliquary (Fig. 13)

BH, LP

Among the interesting finds in the south-eastern corner next to the apse (SE F06_06), is a large sunken reliquary base (J23S-VI/13-01). The reliquary was originally inserted into the floor; its rectangular cavity featured a recess that most likely allowed for the installation of a lid. It also displays a tiny, shallow channel that may have been used to add or remove liquids. The stone was most likely used in the church presbyterium and was taken out when the building was looted; however, this issue needs to be addressed when the church is completely excavated. The stone served also as an altar base as can be deduced from the side recess's small rectangular fields, which would have served as seatings for small columns that supported an altar table.

Similar sunken reliquaries were identified in local context either in the Bema, as in the Reliquary church of Um er-Raṣāṣ dated to 586

(Piccirillo 2006: 381), or in small side chapels, as at the small church built near the so-called Stylite Tower possibly dated to the third decade of the 6th century. Similar reliquaries *in situ* were found in the North Church of Ḥisbān and at the Church of St. Basil at Rihāb (Piccirillo 1981: 70–72, tav. 55; Pappalardo 2006: Foto 14; Bianchi 2022: 57, fig. 128).

The Chancel Screen Mouldings (Fig. 13)

LS

Both trenches contained several more pieces of worked stone, most likely from the screens' frame, in addition to the panels and fragments of the chancel screens. Four fragments (J23S-V/92-04, J23S-V/94-01) were discovered in trench F05 and are made of a stone different from that used for the chancel screen panels themselves. One of those pieces (J23S-V/94-01) is composed of two fitting fragments has a column-like appearance and is made of white marble. It is composed of a slightly broader part, a carved line, and a shaft. The dimensions (roughly 13×7,5–13×6,2cm) might indicate a divider used between the chancel screen panels. As was customary, there were little, frequently square, posts positioned between the slabs of the chancel screen's slabs (Habas 2009: 101; Michel 2001).

Carved Stone (Fig. 13)

LP, LS

A square stone basin (J23S-V/91-03) with a small drainage hole in one of its corners was uncovered. This limestone piece is fractured at the centre suggesting that most likely it belonged to a larger basin. It was found reused upside down in a delimitation wall inside the church as part of the secondary use of the sacred building as a domestic space in the late 9th -10th century. A similar basin was identified at Um er-Raṣāṣ in the area of the church of St. Paul (Piccirillo 2002).

Conclusion

BH

The Al Jumayl church complex is a remarkable building when both architecture and liturgy are taking into account. It blends in well with the array of twin churches that were constructed in various rural and urban

centres of Provincia Arabia in the long Late Antiquity. A number of examples can be given in this context, such as the two neighbouring churches of Nitil (the closest example having one single nave) and the twin churches of Umer-Rasās inside the castrum enclosure, which have comparable architectural settings.

Nonetheless, as dating inscriptions and dedications demonstrate, adjacent buildings may have different functions, such as liturgical, funerary, or memorial. However, more research is still required to fully understand this aspect in our specific situation.

Numerous noteworthy discoveries from the excavation of the North Church of Al Jumayl have been made, some of which have already been documented from the earlier campaigns in 2021 and 2022. These discoveries help to further document the various stages of the building's use.

Up until now, non-invasive techniques have been used to create a thorough map of the site's most notable features. Drones have also been used to refine this map, covering a much larger area and improving our understanding of the settlement's topography for upcoming research. Mapping the production forms and water supply and management is made possible by the LiDAR mapping of the cisterns, the cave dwellings, the quarry, and two winepress facilities.

Furthermore, the examination of the ceramics supports the earlier findings from the excavation in 2022, emphasizing that the buildings in the North Church under investigation were most likely not abandoned until the Fatimid period. The discovery of rich archaeo-zoological material with various animal bones, primarily those of sheep, goats, and small birds in the abandonment layer is noteworthy. Several bones showed obvious cuts and butcher marks. This information confirms meat processing, animal husbandry, breeding practices and especially dietary habits. It also suggests that the church may have served as a deposit for catering waste, which is a strong hint that a semi-nomadic community may have used the building for near-permanent purposes.

The monument's long history is demonstrated by the discoveries, which include pieces of oil-shale chancel screens, tegulae, fine calk plaster,

tesserae, fragments of a basalt millstone, and pottery from the Byzantine, Abbasid, and Fatimid periods. The buildings' secondary use enhances our comprehension of the settlement patterns during the Islamic period, even though the building's religious function was not continuous. Further research projects will concentrate on more specific questions about agricultural use, crop production and harvesting, material and geoarchaeological analysis, and the village's integration into the larger setting of neighbouring settlements.

Bibliography

- Albani, J.
2010 *Elegance Over the Borders: The Evidence of Middle Byzantine Earrings*, Pp. 193–202 in C. Entwistle and N. Adams (eds.), *'Intelligible Beauty': Recent Research on Byzantine Jewelry*. London.
- Alliata, E.
1991 *Ceramica dal Complesso di S. Stefano a Umm al-Rasas*, *LA* 41: 365–422.
1992 *Ceramica e piccoli oggetti dallo scavo della chiesa dei Leoni a Umm al-Rasas*, *LA* 42: 227–250.
- Ariel, D.T.
2017 *A Possible Flan-Mold Fragment from Area H, Jewish Quarter Excavation in the Old City of Jerusalem VII*: 216–241.
- Armstrong, P.
1998 *Byzantine Thebes: Excavations on the Kadmeia*, 1980. *BSA* Vol. 88: 295–335.
- Avissar, M. and Stern, E.J.
2005 *Pottery of the Crusader, Ayyubid, and Mamluk Periods in Israel*. Jerusalem.
- Ayalon, E.
1999 *Corpus of Bone Artefacts*. Pp. 20 in E. Ayalon and C. Sorek (eds.), *Bare Bones. Ancient Artefacts from Animal Bones in Ashkelon*, fig. 4. Tel Aviv.
2003 *The Assemblage of Bone and Ivory Artefacts from Caesarea Maritima, Israel, 1st–13th Centuries CE*, P. 109, fig. 19.178. Unpublished Ph.D. Dissertation, Bar-Ilan University, Tel Aviv.
- Bianchi, D.
2022 *Archäologische Zeugnisse für den Reliquienkult im Heiligen Land*, *MICHA, Kreuz*, 57, fig. 128.
- Boas, A.
1992 *Islamic and Crusader Pottery from Area TP4*. Pp. 154–166 in K. Holum and A. Raban (eds.), *Caesarea Papers, JRA*.
- Catlin, H.W.
1972 *An Early Byzantine Pottery Factory at Dhiorios in Cyprus*. London.
- Dark, K.
2002 *Byzantine Pottery*. Stroud.
- Daviau, P.M. and Beckmann, M.
2001 *Umayyad Painted Pottery and Abbasid Period Lamps at Tell Jawa: A Chronological Dilemma*,

- Bibliothèque archéologique et historique, tome 159: 259–274.*
- Fiema, Z.T.; Frösen J. and Holappa M.
2016 *Petra: The Mountain of Aaron. The Finnish Archaeological Project in Jordan. Vol. 2: The Nabatean Sanctuary and the Byzantine Monastery: 380–385.* Helsinki.
- Foran, D.
2022 The Byzantine Period, Pp. 84–88 in J. Haron and D.R. Clark (eds.), *The Pottery of Jordan: A Manual.* Amman.
- Habas, L.
2009 The Art of Imported Marble Chancel Screens and its Influence on Local Production in the Churches of the Provinces of Palaestina and Arabia: A Case Study, SOMA 2008, Proceedings of the XII Symposium on Mediterranean Archaeology, Eastern Mediterranean University, Famagusta, North Cyprus, 5–8 March 2008: 100–108.
2000 The Bema and Chancel Screen in Synagogues and their Origin, *Journal of Roman Archaeology* 40: 111–130.
- Hadad, S.
2006 Glass Finds. Pp. 626–637, Fig. 19 in A. Mazar, (ed.), *Excavations at Tell Beth-Shean 1989–1996. From the Late Bronze Age to the Medieval Period, Vol. I.* Jerusalem.
- Hamarneh B.
2006 Relazione dello scavo del complesso ecclesiale di Nittl, *Stratigrafia e ceramica, LA* 56: 399–458.
- Hamarneh, B. and Bianchi, D.
2021 The Pottery of the Monastic Complex of Mt Nebo – North Wing: Typology and Chronology. In R. Ployer and D. Svoboda-Bass (eds.), *Magnis Itineribus. Festschrift für Verena Gassner.*
- Hamarneh et al.
2023 The 2019 Austrian al Jumaiyil Project: Preliminary Report, *ADAJ* 61: 251–274.
- Hamarneh, B. and Leutgeb, T.
2023 Photogrammetric Survey and Spatial Recording of Settlement Features at Al Jumayyil (Jordan). 3D Terrain Model, DEM, Orthographic Map, and Ground Plan, *Digital Applications in Archaeology and Cultural Heritage*, Vol. 31. (<https://doi.org/10.1016/j.daach.2023.e00295>).
- Haron, J. and Clark, D. R.
2022 *The Pottery of Jordan: A Manual.* Amman.
- Jackson-Tal, R.
2020 The Glass Finds from the Northwest Quarter of Jerash, Pp. 13–49 in A. Lichtenberger and R. Raja (eds.), *Glass, Lamps, and Jerash Bowls: Final Publications from the Danish-German Jerash Northwest Quarter Project III.*
- Khadija, L.
1992 Designs on Painted Mamluk/Ayyubid Pottery from Rujm el-Kursi, *ADAJ* 36: 345–356.
- Kotter, W.D. and Ray Jr. P.J.
2009 Objects of Stone, Clay, Bone and Ivory from Tell Hesban and Vicinity, Pp. 113–148 in P.J. Ray Jr. (ed.), *Small Finds: Studies of Bones, Iron, Glass, Figurines, and Stone Objects from Tell Hesban and Vicinity, Hesban 12.* Berrien Springs.
- Kreuz, P. A.
2022 Architectural Elements of the Northwest Quarter of Jerash, Pp. 11–60 in A. Lichtenberger and R. Raja (eds.), *Architectural Elements, Wall Paintings, and Mosaics, Final Publications from the Danish-German Jerash Northwest Quarter Project IV.*
- London, B.D.
2009 Metallurgical Samples from Tell Hesban, Pp. 149–162 in P.J. Ray Jr. (ed.), *Small Finds: Studies of Bones, Iron, Glass, Figurines, and Stone Objects from Tell Hesban and Vicinity, Hesban 12.* Berrien Springs.
- Meyer, C.
1988 Glass from the North Theater Byzantine Church, and Soundings at Jerash, Jordan, 1982–1983, *BASOR, Preliminary Reports of ASOR-Sponsored Excavations 1982–85: 175–222.* Chicago.
- McDaniel, J.
2006 The Small Finds, Pp. 293–305 in S. Parker and J.W. Betlyon (eds.), *The Roman Frontier in Central Jordan: Final Report on the Limes Arabicus 1980–1989, Vol. 2.* Washington.
- Michel, A.
2001 Les églises d’époque byzantine et umayyade de la Jordanie V^e–VIII^e siècle. Typologie architecturale et aménagements liturgiques, *Bibliothèque de l’antiquité tardive*, Vol. 2. Turnhout.
- Nabulsi, A.J. and Macdonald, M.C.A.
2014 Epigraphic Diversity in the Cemetery at Khirbet Es-Samra, Jordan, *PEQ* 146/2: 149–161.
- Najjar M.
1989 Abbasid Pottery from El-Muwaqqar. *ADAJ* 33: 305–322.
1999 A Corpus of Islamic Ceramics, Area Z, 1987 Season. Pp. 41–67 in K. Holm and A. Raban (eds.), *Caesarea Papers, JRA*, Vol. 35.
- Pappalardo, C.
2002 Il cortile a sud della Chiesa di S.Paolo ad Umm al-Rasas—Kastron Mefaa in Giordania, *LA* 52: 385–440.
2006 Ceramica e piccoli oggetti dallo scavo della chiesa del reliquiario ad Umm er-Rasas, *LA* 56: 389–398.
- Parton H,
2013 Milling and Weaving Equipment, including Hand-held Stone Tools, Mortars, Querns, and Stone Vessels, Loom Weights, and Spindle Whorls, *Excavations at Zeugma*, Vol. 3: 295–344.
- Piccirillo, M.
1981 Chiese e mosaici della Giordania settentrionale. Jerusalem.
1992 La chiesa dei Leoni- a Umm al-Rasa—Kastron Mefaa, *LA* 42: 199–225.
1993 *Mosaics of Jordan.* Amman.
1997 La Chiesa di San Paolo a Umm al-Rasas—Kastron Mefaa, *LA* 47: 375–394.
2003 La chiesa della tabula Ansata a Umm er-Rasas—

- Kastron Mefaa, *LA* 53: 285–324.
- 2006 La chiesa del Reliquiario a Umm al-Rasas, *LA* 56: 375–388.
- Platt, E.E. and Ray Jr. P.J.
- 2009 The Textile Tools from Tell Hesban and Vicinity, Pp. 163–198 in P.J. Ray Jr. (ed.), *Small Finds: Studies of Bones, Iron, Glass, Figurines, and Stone Objects from Tell Hesban and Vicinity, Hesban 12*. Berrien Springs.
- Platt, E.E.
- 2009 The Cosmetic Objects from Tell Hesban and Vicinity, Pp. 199–227 in P.J. Ray Jr. (ed.), *Small Finds: Studies of Bones, Iron, Glass, Figurines, and Stone Objects from Tell Hesban and Vicinity, Hesban 12*. Berrien Springs.
- 2009 The Jewellery from Tell Hesban and Vicinity, Pp. 227–296 in: P.J. Ray Jr. (ed.), *Small Finds: Studies of Bones, Iron, Glass, Figurines, and Stone Objects from Tell Hesban and Vicinity, Hesban 12*. Berrien Springs.
- Sanmori C. and Pappalardo C.
- 1997 Ceramica della Chiesa di San Paolo e della Cappella deo Pavoni–Umm al-Rasas, *LA* 47: 395–428.
- Stern, E.J.
- 1999 The Pottery of the Thirteenth-Fifteenth Centuries from Giv’at Yasaf (Tell er-Ras), *Atiquot* 37: 125–136.
- Schmid, S.G.
- 1995 Nabataean Fine Ware from Petra, *SHAJ* V: 637–647.
- Stephens, J.
- 2008 Ancient Roman Hairdressing. On (Hair) Pins and Needles. *Journal of Roman Archaeology*, 21: 110–132. Baltimore.
- de Vincenz, A.
- 2015 The Roman, Byzantine and Early Islamic Pottery, In V.W. Avrutis (ed.), *Wine Presses at the Nesher-Ramla Quarry. A Thousand Years of Winemaking*. Jerusalem.
- 2020 The Byzantine Pottery; Pp. 71–15 in D. Ben-Ami and V. Tchekhanovets (eds.), *Jerusalem. Excavations in the Tyropoeon Valley*. Jerusalem.
- Walker, B.
- 2012 The Islamic Age–Islamic Pottery from Tell Hesban. Pp. 507–594 in J.A. Sauer and L.G. Herr (eds.), *Ceramic Finds: Typological and Technological Studies of the Pottery Remains from Tell Hesban and Vicinity*. Berrien Springs.
- Walmsley, A.
- 2022 The Early Islamic Period, Pp. 89–107 in J. Haron and D.R. Clark (eds.), *The Pottery of Jordan: A Manual*. Amman.