

An example tooth (OH 7 M_2) showing the molar cusps relevant for this index. Each specimen is imaged in occlusal, lingual and distal view at the OES and EDJ. The location of the metaconid, entoconid and hypoconulid is marked with coloured circles as shown. Scale bars = 10mm

The lingual and distal accessory cusp morphology of each specimen is described, and the EDJ score for each specimen is given (using the scoring system outlined in the main text). Finally, the level of tissue distinction present in the scan was assessed for each specimen as good, moderate or poor. These categories allow assessment of the likelihood of a small accessory cusp being missed in our EDJ scores.

Paranthropus robustus



DAC: Single interconulid type

LAC: None

At the OES there is a raised shoulder at the base of the distal metaconid ridge with an associated crest running into the central fovea. This shouldering can also be seen at the EDJ but does not reach the level of a cusp. A single interconulid type DAC is present at the EDJ, and is clear at the OES.



DAC: Single interconulid type

LAC: None

There is a DAC present at the OES, and at the EDJ it is a small interconulid type. There is no LAC at the EDJ or OES



DAC: Single interconulid type

LAC: None

The OES is relatively worn and no DAC or LAC can be seen. At the EDJ there is a very small interconulid type DAC. There is a shouldering on the distal ridge of the metaconid, but it does not reach the level of a cusp.



DAC: Single interconulid type

LAC: None

There is a large DAC present at the OES and EDJ that is an interconulid type. There is no LAC at the EDJ or OES, but there is some light shouldering on the distal metaconid ridge.



DAC: Single hypoconulid type

LAC: None

There is a large DAC present at the OES that is also present at the EDJ, it is a hypoconulid type. At the OES there is some sign of a possible LAC at the base of a metaconid ridge, however at the EDJ there is no cusp present.



DAC: None

LAC: None

At the OES there is a small DAC, but there is no sign of a cusp at the EDJ; the distal marginal ridge is flat. At the OES, there is a small LAC at the base of the metaconid ridge, but at the EDJ this corresponds to shouldering on the distal metaconid ridge, but no cusp.



DAC: Single interconulid type

LAC: None

There is a medium sized DAC present at the OES and EDJ, it is an interconulid type. There is no LAC visible at the OES. At the EDJ there is a crack along the distal metaconid ridge, however there is no sign of a LAC, although there is likely some shouldering.



DAC: None

LAC: None

There is no sign of a DAC at the EDJ or OES. There is no clear LAC at the OES or EDJ, but there is a shouldering along the distal metaconid ridge.



DAC: Double interconulid type

LAC: None

There is some sign of a cusp on the distal metaconid crest at the OES, however this is not visible at the EDJ. There is a crack along this region of the EDJ however, so it is possible that a small cusp was present here. There is a double DAC present at the OES and at the EDJ it is clear that it is an interconulid type.



DAC: Single interconulid type

LAC: None

At the OES there is a single DAC that is also present at the EDJ as an interconulid type. There is some light shouldering on the distal metaconid ridge at the OES and EDJ, however it does not reach the level of a cusp.



DAC: Single hypoconulid type

LAC: None

The OES is quite worn, making assessment of accessory cusps difficult. However, at the EDJ it is clear that there is no LAC but there is a single hypoconulid type DAC.



DAC: Single interconulid type

LAC: None

There is no LAC at the OES or EDJ. There is a DAC present at the OES, and at the EDJ it is a large interconulid type DAC.



DAC: Single interconulid type

LAC: None

The OES is relatively worn, but fissure patterns suggest the presence of a DAC. There is a small single interconulid type DAC at the EDJ. There is no LAC at the OES or EDJ, although there is some shouldering on the distal metaconid crest at the EDJ.



DAC: Triple interconulid type

LAC: None

There are a number of cracks along the EDJ, including in the DAC and LAC regions, however in this case there is good agreement between the EDJ and OES such that we can be confident of the cusp arrangements. There is no sign of a LAC at the EDJ or OES. There is a triple DAC at the OES; the cusp closest to the entoconid is the largest and the cusp closest to the hypoconulid is the smallest. At the EDJ we see a triple interconulid type arrangement. As at the OES, the cusp closest to the hypoconulid is the smallest to the cusp closest to the hypoconulid is the smallest. The middle cusp has been partly reconstructed due to a crack but appears to be of similar size to the cusp closest to the entoconid.



DAC: Single interconulid type, single hypoconulid type

LAC: None

There is no LAC at the OES, and at the EDJ is only shouldering on the distal metaconid ridge. There is a double DAC at the OES. At the EDJ, both DACs are present, the larger is a hypoconulid type while the smaller is an interconulid type. The smaller interconulid type DAC has a crack running along it at the EDJ, but we are nonetheless confident of it's presence.



DAC: Double interconulid type

LAC: None

At the OES there are two small LACs at the base of the metaconid distal crest. At the EDJ the LACs are either not present, or are very small and difficult to distinguish from scan noise. There is a triple DAC at the OES, however only two are visible at the EDJ. Again, it is possible that the third is present but too small to be visible. The two that are visible are interconulid types.



DAC: Single interconulid type, single hypoconulid type

LAC: None

There is no LAC at the OES, and although there is a crack in the LAC region, there is no sign of a LAC here either. At the OES there is a double DAC; both DACs are also present at the EDJ. One is an interconulid type and the other is a hypoconulid type, just distal to the hypoconulid cusp tip.



DAC: Single interconulid type

LAC: Single interconulid type

There is an unusual arrangement of cusps in this specimen, particularly as the hypoconulid is very small and the entoconid is mesially placed. At the OES there is a large DAC, and at the EDJ it can be seen that this cusp is an interconulid type and is larger than the hypoconulid and approximately the same size as the entoconid. There is a large LAC, approximately the same size as the entoconid, present at the OES and EDJ, it is an interconulid type. At the OES there is an additional smaller LAC present on the distal metaconid ridge, but this is not visible at the EDJ.



DAC: Single interconulid type

LAC: None

At the OES it appears that the hypoconulid may be just distal to the hypoconid, however there is no sign of a cusp here at the EDJ, suggesting instead that the hypoconulid is more distally placed. In this case, there is one DAC, just lingual of the hypoconulid. At the EDJ the main and accessory cusps are small, but the DAC is just visible, and is an interconulid type. There is no LAC at the EDJ or OES.



DAC: Single interconulid type

LAC: None

There is no LAC at the OES or EDJ. At the OES there are two clear DACs, and possibly a third very small DAC between the larger two. At the EDJ, one interconulid type DAC is visible, which corresponds to the largest of the DACs visible at the OES. The other one or two DACs are not clear at the EDJ; there are several small potential cusps, but there is a crack running along the distal marginal ridge at the EDJ that makes identification of very small cusps difficult.



DAC: Single hypoconulid type, single interconulid type

LAC: Single entoconid type, single metaconid type

This specimen has a number of cusps, and identification of the main cusps is somewhat difficult, particularly as the accessory cusps and main distal cusps are of a similar size. We suggest that the arrangement shown above is most likely, and in this case there are two DACs and two LACs. These cusps are visible at the OES and EDJ, although at the EDJ they are small.

Paranthropus boisei



Scan distinction: Moderate

DAC: Single interconulid type

LAC: None

There is no LAC at the OES or EDJ. At the OES, there is a large DAC that is also present at the EDJ as an interconulid type.



DAC: Single hypoconulid type

LAC: None

The OES is relatively worn, making assessment of accessory cusps difficult. There is no LAC present at the EDJ, however there is some shouldering on the distal metaconid ridge. There is a large hypoconulid type DAC at the EDJ that is almost as big as the hypoconulid.



DAC: Single hypoconulid type

LAC: None

There is no LAC at the OES or EDJ. There is a clear DAC at the OES. At the EDJ the DAC is also present; it is situated on the base of the distal hypoconulid ridge, making it a hypoconulid type.



DAC: Single interconulid type

LAC: None

There is no LAC present at the OES or EDJ, although there is some shouldering on the distal metaconid ridge. There is a large DAC present at the OES, and at the EDJ it is present as an interconulid type



DAC: Single interconulid type

LAC: None

There is no LAC at the OES or EDJ. There is a DAC present at the OES and EDJ that is larger than then hypoconulid. At the EDJ it is an interconulid type.



DAC: Single interconulid type, single entoconid type

LAC: Single metaconid type

At the OES there is a small LAC present, at the EDJ it is very small but visible at the base of the distal ridge of the metaconid, making it a metaconid type. There are two DACs visible at the OES and EDJ. The larger of the two is an interconulid type, and the smaller is an entoconid type.

Australopithecus afarensis



DAC: None

LAC: None

There are no accessory cusps present at either the OES or EDJ.



DAC: Single interconulid type

LAC: None

At the OES, a slightly worn but clear DAC can be seen, and this is also evident at the EDJ as an interconulid type DAC. There is no LAC at the OES or EDJ, although there is heavy shouldering on the distal ridge of the metaconid.



DAC: None

LAC: None

The level of dental wear in this specimen makes assessment of accessory cusps at the OES difficult. However there is no DAC visible at the OES or EDJ. There is no sign of a LAC at the OES, although the area is worn. At the EDJ there is a possible very small metaconid type LAC that is associated with a small ridge running into the occlusal basin, however such a ridge may also be present without an associated cusp, and in this case the cusp is too small to be reliably distinguished from scan noise.



Scan distinction: Moderate

DAC: None

LAC: None

There is no DAC at the OES or EDJ. There is no LAC at the OES and although there is shouldering on the distal metaconid ridge at the EDJ, there is no LAC present.



DAC: None

LAC: None

There is no DAC at the OES or EDJ, however at the EDJ there is a slightly raised section of the distal marginal ridge. There is no LAC at the OES or EDJ, although at the EDJ there is some shouldering on the metaconid distal ridge with an associated accessory ridge running into the occlusal basin, however the shouldering does not reach the level of a cusp.


Scan distinction: Moderate

DAC: Single interconulid type

LAC: None

There is some sign of a DAC at the OES, and at the EDJ there is a small interconulid type DAC. At the OES there is a fissure suggesting the presence of a LAC just distal to the metaconid. At the EDJ there is heavy shouldering on the distal metaconid ridge, however it does not reach the level of a cusp.



DAC: Single interconulid type

LAC: None

There is a clear DAC at the OES and EDJ. It is an interconulid type. There is no sign of a LAC at the EDJ or OES, although there is some shouldering on the distal metaconid ridge



DAC: Single interconulid type

LAC: Single interconulid type

There is a medium interconulid sized DAC visible at the OES and EDJ. There is a clear but small interconulid type LAC visible at both the OES and EDJ.



DAC: Single interconulid type

LAC: None

No DAC is visible at the OES, possibly due to wear. At the EDJ a single interconulid type DAC is present. There is no LAC at the OES or EDJ, although at the EDJ there is some shouldering on the distal metaconid ridge.



DAC: None

LAC: Single metaconid type LAC

At the OES there is some sign of a DAC, however the equivalent feature at the EDJ is either not present or so small as to be indistinguishable from scan noise. At the OES, fissure patterns and a slight raising of the base of the distal metaconid ridge suggest the presence of a small LAC. At the EDJ there is a small metaconid type LAC.



DAC: Single hypoconulid type

LAC: None

Fissures at the OES suggest the presence of a DAC. At the EDJ, there is a small hypoconulid type DAC. At the OES, there is a slight raising of the distal end of the distal metaconid ridge, and there is some shouldering at the EDJ. However it does not reach the level of a cusp.



DAC: None

LAC: None

A small but clear DAC is present at the OES, but is not visible at the EDJ. At the OES, at the base of the distal metaconid ridge there is a potential LAC with an associated accessory ridge. However there is no cusp at the EDJ, although the metaconid ridge does show some shouldering.



Scan distinction: Moderate

DAC: None

LAC: None

Although the enamel is worn, the preserved fissure patterns suggest the possible presence of a DAC. At the EDJ there is a possible small DAC, however it is too small to distinguish from the noise present in the scan. There is no LAC evident at the OES. At the EDJ, the distal metaconid ridge has shouldering, but there is no LAC.



Scan distinction: Moderate

DAC: None

LAC: None

The DAC region is cracked and somewhat worn, but there is no clear DAC at the OES. No cusp is visible at the EDJ, although it is possible that a small cusp is obscured by the crack. At the OES there is a small LAC present which appears to be an interconulid type, however this is not visible at the EDJ. There is a small possible entoconid type LAC at the EDJ, however it is too small to reliably distinguish from scan noise.



DAC: Single interconulid type

LAC: None

A DAC is visible at the OES, and at the EDJ it can be seen that it is an interconulid type DAC. There is no sign of a LAC at the OES or EDJ



DAC: None

LAC: None

The OES is quite worn, making assessment of a DAC difficult. There is no DAC present at the EDJ. At the OES the base of the metaconid distal ridge is raised, which could suggest the presence of a LAC, although this is not supported by the preserved fissure patterns. At the EDJ, the distal metaconid ridge shows some shouldering, but there is no LAC.



DAC: None

LAC: None

There are no accessory cusps present at the OES or EDJ, although there is some shouldering on the distal metaconid ridge.



DAC: Single interconulid type

LAC: None

Part of the DAC region of the tooth is broken off, however it is clear at the EDJ and OES that a large DAC was present. The DAC is well-separated from both the entoconid and hypoconulid, suggesting it was an interconulid type. The missing region of the tooth means it is also possible that further DAC features were also present. Part of the enamel of this tooth in the entoconid region was outside of the scan region and so is missing from our CT-based surface models. On the original specimen, there are breakages in the enamel in this region. This makes assessment of the LAC at the OES difficult, although we can be confident that a metaconid type-LAC was not present. At the EDJ there is no LAC present, but there is shouldering on the distal metaconid ridge.



Scan distinction: Moderate

DAC: Single interconulid type

LAC: None

There is a large DAC at the OES that is partly incised by a fissure and appears to be a double DAC. However at the EDJ there is only a single interconulid type DAC. At the OES there is a LAC at the base of the metaconid distal ridge. At the EDJ this cusp is not visible, instead there is some shouldering on the metaconid distal ridge. However, there is a double metaconid dentine horn present; this could be considered a metaconid type LAC extremely close to the metaconid, however the close proximity and approximately equal height of the two cusps suggests a double metaconid.



DAC: Double interconulid type

LAC: Single interconulid type

There is a double DAC visible at the OES, with a possible third small DAC also visible. At the EDJ there is a clear DAC corresponding to the cusp closest to the entoconid, then a small second cusp buccal to the first. The possible third DAC seen at the OES corresponds to only a very small raised region of the distal marginal ridge at the EDJ. Both EDJ cusps are interconulid types. There are two LACs visible at the OES. The smaller and more mesial of the two is at the base of the distal metaconid crest. At the EDJ the larger of the two cusps is clearly visible, but the smaller more mesial LAC is very small at the EDJ and is therefore difficult to distinguish from scan noise.



DAC: Single interconulid type

LAC: Single interconulid type

There is a single large DAC at the OES that is also seen at the EDJ as an interconulid type. At the OES there is a single large LAC. At the EDJ there is a large interconulid type LAC, as well as a cusp just distal to the metaconid. This could be considered a metaconid type LAC close to the metaconid, however we consider it a doubled metaconid here for the same reasons given for the M3 of A.L. 266-1.

Australopithecus africanus



DAC: None

LAC: None

There are cracks through the DAC and LAC regions, but only very small accessory cusps would be obscured. There is no sign of any accessory cusps at the OES or EDJ.



DAC: None

LAC: None

There is no DAC or LAC at the OES or EDJ, although the metaconid distal marginal ridge shows heavy shouldering.



DAC: None

LAC: None

The enamel is relatively worn but there is no sign of a DAC or LAC at the enamel. The EDJ also shows no DAC or LAC.



DAC: None

LAC: None

There is no DAC or LAC at the OES or EDJ



DAC: Single interconulid type

LAC: None

An interconulid type DAC is visible at the EDJ, and is large and well-separated from the entoconid and hypoconulid at the OES. A LAC is visible at the OES, however at the EDJ there is only shouldering on the distal metaconid ridge.



Scan distinction: Moderate

DAC: None

LAC: None

Some parts of the crown are missing, however the DAC and LAC regions are preserved. There is no sign of either cusp at the OES or EDJ



DAC: Double interconulid type, single hypoconulid type

LAC: Single metaconid type

There are a number of cracks in the enamel of this specimen, which can obscure our segmentation of the EDJ in some cases. There are three DACs that are visible at both the EDJ and OES; one is associated with the hypoconid and the other two appear to be interconulid types. At the OES, there is a double LAC. At the EDJ, one LAC is visible, and there is a possible second smaller LAC immediately distal to this, however it is obscured by a crack. If this more distally placed second cusp was present, it would have been smaller than the more mesial LAC, which is the opposite of what we see at the OES where the more distally placed LAC is larger. Alternatively, there is only one LAC at the EDJ, meaning one of the OES cusps is not represented at the EDJ.



DAC: None

LAC: None

There is no DAC or LAC at the OES or EDJ



DAC: None

LAC: None

There is no DAC or LAC at the OES or EDJ



DAC: None

LAC: Single metaconid type

The LAC is visible at the OES and EDJ, although at the EDJ it is a more low and rounded than at the OES. There is a small but clear DAC at the OES, however at the EDJ there is no cusp visible. It is possible that, since the DAC at the OES is so small, the equivalent cusp at the EDJ would be too small to be visible at this resolution.



DAC: Single interconulid type

LAC: None

There is a large DAC at the OES, and at the EDJ there is a low broad interconulid type DAC. There is a small LAC at the OES at the base of the metaconid ridge, as well as an even small potential second LAC, but no cusps are visible at the EDJ, although there are a number of cracks present in the LAC region. It is also possible that the EDJ cusps would be too small to be visible at this resolution.



DAC: Single interconulid type

LAC: None

The enamel is worn, but fissures at the OES show that a DAC is present. At the EDJ, a low broad interconulid type DAC is visible. The metaconid and entoconid are worn and the enamel is broken in this region, however there is no sign of a LAC at the OES, and the same is true of the EDJ.



DAC: None

LAC: None

There is no DAC or LAC present at the OES or EDJ.



DAC: Single interconulid type

LAC: Single metaconid type

At the OES there is a clear but small DAC. At the EDJ this corresponds to a very low broad interconulid type DAC. At the OES and EDJ there is a single large metaconid type LAC.



DAC: Single interconulid type

LAC: Single metaconid type, single entoconid type

There is a single large DAC present at the EDJ and OES. There is a breakage in the metaconid region with some enamel and dentine missing and a crack that runs into the occlusal basin. Distal to the crack, there is a metaconid type LAC at the OES and EDJ. There is also a smaller entoconid type LAC – this is clearer at the EDJ than the OES.



DAC: Single interconulid type, single hypoconulid type

LAC: None

At the OES, there is one clear large DAC as well as a smaller, less distinct cusp on the distal ridge of the hypoconulid. These cusps are replicated at the EDJ where there is a large interconulid type DAC and a second smaller hypoconulid type. There is a LAC on the distal ridge of the metaconid that is clear at the OES, however at the EDJ there is a crack running along the metaconid distal ridge. Nonetheless, while this region shows some shouldering, there is no sign of a cusp at the EDJ.



DAC: Double interconulid type

LAC: None

The DAC region is slightly worn, but it is clear that there is a double DAC present, and at the EDJ both DACs as a double interconulid type. There is no LAC visible at the OES or EDJ.



DAC: Double hypoconulid type

LAC: None

There is no LAC visible at the OES or EDJ. There is a double DAC visible at the OES, and at the EDJ it can be seen that both cusps are present on the distal ridge of the hypoconulid.



DAC: Single interconulid type

LAC: Single metaconid type

At the OES, a large LAC is visible. At the EDJ there is a broad metaconid type LAC. There are two DACs present at the OES, however these are less clear at the EDJ. The larger DAC, closer to the entoconid, is seen at the EDJ as a low, broad interconulid type cusp. The smaller DAC cannot be distinguished at the EDJ.


DAC: Single interconulid type + single hypoconulid type

LAC: None

At the OES there are two DACs, one associated with the hypoconulid. This can be seen at the EDJ also where there is one interconulid type and one hypoconulid type DAC. There is no LAC at the OES; although there is a crack running along the distal ridge of the metaonid at the EDJ, there is nonetheless no sign of a LAC here.



DAC: Double interconulid type

LAC: Single interconulid type, single metaconid type

There is a double DAC, both interconulid types, visible at the OES and EDJ. At the EDJ, the cusp closer to the hypoconulid is very small. There are also two LACs, one larger interconulid type, and a second smaller metaconid type.



DAC: Single interconulid type

LAC: None

There is a single large DAC at the OES, it is also visible at the EDJ as a large interconulid type. There is no LAC at the OES or EDJ.





DAC: None

LAC: Metaconid type

The tooth is moderately worn at the OES. There is no sign of a DAC at the OES or EDJ. Despite the wear, there is the remnant of a fissure distal to the metaconid that could suggest the presence of a LAC. At the EDJ there seems to be a small LAC that is associated with an accessory ridge on the distal metaconid ridge. The cusp is a metaconid type.



DAC: None

LAC: Metaconid type

The morphology of this specimen is similar to the antimere. There is no DAC at the OES or EDJ. There is a fissure suggesting the presence of a LAC at the OES, and at the EDJ there is a small metaconid type LAC.



DAC: None

LAC: Single interconulid type

At the OES there is some sign of a possible small DAC, however there is no cusp at the EDJ. At the OES there is a LAC, although it is smaller than in the antimere. At the EDJ, the LAC is a low and broad interconulid type. There is also some shouldering on the distal metaconid ridge.



DAC: None

LAC: Single interconulid type

There is no DAC at the OES or EDJ. There is a LAC present at the OES that is present at the EDJ as a low broad interconulid type cusp.



This specimen has a number of similar sized lingual cusps, making identification of the entoconid difficult.

At the EDJ and OES, there appears to be a large single LAC and a large single DAC. However, this assessment relies on our assignment of the entoconid as shown above. Other assignments of the entoconids would instead suggest the presences of either a double DAC or double LAC.





DAC: None

LAC: Single metaconid type

There is a breakage in the enamel on the the disto-lingual margin of the tooth, however no DAC is visible in the remaining enamel, and further the EDJ is not affected, and shows no DAC. There is a single LAC at the OES and at the EDJ it is a metaconid type; although it is closer to the entoconid, it is placed at the base of the metaconid distal ridge.



DAC: Single interconulid type

LAC: None

The OES is quite worn, making precise assessment of accessory cusps difficult. There is no LAC at the EDJ or OES, although the metaconid is quite worn even at the dentine level. We would expect a metaconid type LAC to be visible in the portion of EDJ that is preserved, however it is possible that one was present closer to the metaconid cusp tip. Wear makes assessment of the DAC difficult at the OES, but there is an interconulid type DAC present at the EDJ.



LAC: None

The specimen is extremely worn and the DAC region is not preserved. The LAC region is worn at the OES, but at the EDJ more of the LAC region is preserved and there is no cusp.



DAC: None

LAC: Single metaconid type

At the OES, there is a very small DAC on the distal marginal ridge, however this is not visible at the EDJ. There is a large LAC visible at the OES and EDJ; it is a metaconid type.



DAC: None

LAC: None

This specimen is worn and broken, however much of the DAC and LAC regions are preserved at the EDJ. There are no signs of a DAC or LAC at the OES or EDJ, although there is some shouldering on the distal metaconid ridge.



DAC: None

LAC: Single metaconid type

There is no DAC visible at the OES or EDJ. There is a clear LAC at the OES that is also present at the EDJ as a metaconid type



DAC: None

LAC: Single metaconid type

As in the antimere, there is no DAC at the OES or EDJ. There is a LAC evident at the OES, which is a metaconid type at the EDJ. There is also a second, smaller potential metaconid type LAC closer to the metaconid cusp tip, however since the scan distinction is moderate, it cannot be reliably distinguished from scan noise. However, there are some faint fissures at the OES that may be the result of this second smaller cusp.



DAC: None

LAC: Single metaconid type

There is no DAC at the OES or EDJ. At the OES there is one large LAC that is slightly better separated from the entoconid than the metaconid. At the EDJ it is at the base of the distal metaconid ridge, making it a metaconid type. Mesial to this there is a slightly raised section of the distal metaconid ridge that is also visible at the OES, but it does not reach the level of a cusp.



DAC: Single hypoconulid type

LAC: None

There is no LAC at the OES or EDJ. At the OES, fissure patterns suggest the possible presence of a DAC. At the EDJ there is a hypoconulid type DAC.



DAC: Single hypoconulid type

LAC: None

The tooth is quite worn, so accessory cusps are difficult to assess at the OES. There is no LAC at the EDJ. There is a crest running from the entoconid to the distal marginal ridge, and where this ridge connects there is a hypoconulid type DAC



DAC: None

LAC: Single metaconid type

There is no DAC at the EDJ or OES. The OES suggests the presence of a DAC. This is also evident at the EDJ where a single metaconid type LAC is present.



DAC: Single hypoconulid type

LAC: None

The OES is relatively worn, however there is some sign of a DAC. At the EDJ there is a hypoconulid type DAC. There is no sign of a LAC at the OES or EDJ.



DAC: Single interconulid type

LAC: None

There is a DAC visible at the OES; at the EDJ it is an interconulid type. There is also a LAC visble at the OES, however it is not visible at the EDJ. It is possible that a small LAC was present however, but cannot be distinguished here from scan noise.



DAC: Single hypoconulid type

LAC: None

There is a possible LAC at the OES, however there is no cusp at the EDJ, similar to the antimere, although the OES morphology is less pronounced in this tooth. There is a DAC at the OES that is also present at the EDJ as a hypoconulid type. Additionally, at the EDJ it is clear that the hypoconulid morphology is unusual; there is a double, or possibly triple, cusp at the EDJ. Two clear cusp tips are visible and a third, smaller possible cusp is visible between the two. This is somewhat visible at the OES where the hypoconulid has a furrow on its buccal surface.



DAC: None

LAC: None

There is a large crack just distal to the metaconid at the OES and EDJ, however there is nothing to suggest that this crack obscures the visibility of a LAC at either surface. There is a DAC visible at the OES and at the EDJ it is a hypoconulid type.



DAC: Single interconulid type

LAC: None

There is no LAC at the EDJ or OES. There is a large DAC at the OES that at the EDJ is a large interconulid type.



LAC: Single interconulid type

The tooth is missing distal and buccal portions, so only the LAC can be assessed. At the OES, most of the entoconid is missing, but there is a single LAC present just mesial of the broken region. At the EDJ the entoconid is preserved, along with an interconulid type LAC



DAC: Double interconulid type

LAC: Single metaconid type

At the OES there is a small potential LAC at the base of the metaconid, and this corresponds to a small metaconid type LAC at the EDJ. There are two LACs at the OES, which is mirrored at the EDJ where there is a double interconulid type DAC.



DAC: Single interconulid type

LAC: Single interconulid type

The enamel surface is highly crenulated, complicating the assessment of accessory cusps. There is a one clear DAC at the OES, as well as a possible second just distal to the hypoconulid. At the EDJ, one interconulid type DAC is present. The possible second DAC visible at the OES is either absent at the EDJ, or may be very small and obscured by a crack at the EDJ. There are two LACs at the OES, however only one of them (the more distal of the two) is visible at the EDJ as a small interconulid type. The second may be too small to distinguish at the EDJ.

Homo habilis



DAC: None

LAC: Single interconulid type

There is no DAC visible at the OES or EDJ. There is a LAC visible at the OES, and although the scan distinction is poor, there does appear to be an interconulid type LAC at the EDJ.



DAC: None

LAC: Double metaconid type

The OES shows a fissure suggesting the presence of a LAC. At the EDJ there is a double metaconid type LAC. There is no sign of a DAC at the OES or EDJ.



DAC: None

LAC: Double metaconid type

The morphology is very similar to the antimere. There is no sign of a DAC at the OES or EDJ. The OES has fissures suggesting the presence of a LAC and at the EDJ there is a double metaconid type LAC



DAC: None

LAC: None

The enamel in this tooth is poorly preserved, but the scan distinction is good. There is no sign of a DAC at the EDJ or OES. There is no clear LAC at the OES, and although there is heavy shouldering on the distal metaconid ridge, it does not reach the level of a cusp.



DAC: None

LAC: Single metaconid type

There is no sign of a DAC at the OES or EDJ. The fissure patterns at the OES suggest the potential presence of a LAC, and at the EDJ there is a single metaconid type LAC.



DAC: None

LAC: Single metaconid type

There is no sign of a DAC at the OES or EDJ. There is a LAC evident at the OES, and at the EDJ there is a broad metaconid type LAC


DAC: None

LAC: Single metaconid type

There is no DAC at the OES or EDJ. At the OES, fissure patterns suggest the presence of a LAC and there is a small LAC present at the EDJ that is a metaconid type.



DAC: Double interconulid type

LAC: Single interconulid type

At the OES there is a large DAC that is partly incised by a small fissure. At the EDJ there is a clear double DAC (interconulid type). A LAC is clearly visible at the OES, and is also present at the EDJ (interconulid type). There is also some shouldering on the distal metaconid ridge.



This scan distinction for this specimen is very minimal; not sufficient for segmentation.

LAC: OES shows possible small cusp

DAC: No sign of DAC at OES



DAC: None

LAC: Single metaconid type

There is no DAC visible at the OES or EDJ. There is a LAC visible at the OES and at the EDJ there is a potential corresponding metaconid type LAC, although it is very small.



Scan distinction: Moderate (and low resolution)

LAC: None

There is no sign of a LAC at the EDJ or OES



DAC: None

LAC: Single metaconid type

There is no DAC at the OES or EDJ. There is a LAC present at the OES that appears to be close to the metaconid. At the EDJ there is a small metaconid type LAC halfway along the distal metaconid ridge.



DAC: Single interconulid type

LAC: Single interconulid type

At the OES, a DAC is visible that is also present at the EDJ as a single interconulid type. A large LAC is visible at the OES, and fissures suggest the possible presence of a second LAC mesial to this. At the EDJ, a clear interconulid type LAC can be seen, and there is some shouldering on the distal metaconid ridge. The EDJ also reveals a large secondary crest associated with the metaconid that contributes to the fissure pattern seen at the OES.



DAC: Single interconulid type, single entoconid type

LAC: Single interconulid type

Enamel preservation is poor on the mesial side of the tooth, but scan distinction is good. There is a crack in the DAC region, however a large DAC is visible at the OES. At the EDJ, there is a large interconulid type DAC. Mesial to this, there is a small entoconid type DAC. There is a small LAC at the OES. At the EDJ there is a crack along the distal metaconid ridge, but a small interconulid type DAC is visible just distal to this.



This tooth has better enamel preservation than it's antimere, but has no scan distinction so the EDJ cannot be imaged. There is no clear LAC in this specimen, but there is some shouldering on the entoconid mesial ridge. There are two DACs, which matches the form seen at the EDJ of the antimere.



DAC: None

LAC: Single interconulid type

A small but well-defined LAC is visible at the OES, and is similarly small but visible at the EDJ as an interconulid type. The distal metaconid ridge shows some shouldering at both the EDJ and OES. No DAC is visible at the EDJ or OES



Scan distinction: Moderate (and low resolution)

DAC: Single hypoconulid type

LAC: None

There is no well-defined LAC as is present in this tooth's antimere, but there are some small cusp-like features at the OES along the distal metaconid ridge. At the EDJ, some shouldering on the metaconid ridge is visible, but no cusps can be seen. However small cusps may be missed due to the low resolution of the scan. There is a DAC visible at the OES just lingual of the hypoconulid and the EDJ reveals a small hypoconulid type DAC.



DAC: Single interconulid type, single hypoconulid type

LAC: Single interconulid type

There is a LAC present at the OES, and this is also present at the EDJ, where it is clear that it is an interconulid type. There is also some shouldering on the distal metaconid ridge. Both the EDJ and OES show a double DAC – one is a hypoconulid type and the other an interconulid type.



DAC: None

LAC: interconulid type

There is a large LAC at the OES that at the EDJ is an interconulid type. There is no DAC at the OES or EDJ.

Homo erectus (Africa)



DAC: None

The LAC region is not fully preserved as the metaconid is missing. However there is no LAC evident in the regions preserved either at the OES or EDJ. The DAC region is preserved, and there is no DAC at the OES or EDJ.



DAC: None

LAC: Single interconulid type, single metaconid type

At the OES the fissure patterns suggest the possible presence of a DAC, however at the EDJ there is no DAC. There are two LACs at the OES, and this is mirrored at the EDJ. The larger LAC is an interconulid type, and the second is a smaller metaconid type.



DAC: None

LAC: Single metaconid type

There is no DAC at the OES or EDJ. Fissure patterns at the OES suggest the presence of a LAC just distal to the metaconid, and despite poor scan distinction this can also be seen at the EDJ as a metaconid type LAC.



DAC: None

LAC: Single metaconid type

As in the antimere, there is no DAC at the OES or EDJ, but there is a metaconid type LAC that can be seen at the OES and EDJ.



DAC: None

LAC: None

There is no sign of a DAC at the EDJ or OES. There is no clear sign of a LAC at the OES, although there is a fissure just distal of the metaconid that could suggest the presence of a cusp. Although the distinction is poor, there is no sign of a LAC at the EDJ.



DAC: None

LAC: None

There is no sign of a DAC or LAC at the EDJ or OES.



DAC: Single interconulid type

LAC: None

The OES is relatively worn, but there is a clear DAC that is also present at the EDJ as an interconulid type. At the OES there is a LAC just distal of the metaconid, however at the EDJ it does not form a clear cusp, although there is shouldering on the distal metaconid ridge.



DAC: None

LAC: None

The OES is quite worn, which makes assessment of accessory cusps difficult. Nonetheless, fissure patterns suggest the potential presence of a LAC just distal of the metaconid, and there is also a slight rounding on the lingual face of the tooth that may correspond to this cusp. Scan distinction is poor, but at the EDJ there appears to be shouldering on the distal metaconid ridge, but no cusp. There is no clear sign of a DAC at the EDJ or OES.



DAC: Single interconulid type

LAC: None

As in the antimere, dental wear makes assessment of accessory cusps difficult. Fissures suggest the potential presence of a LAC at the OES, and there is clear shouldering on the distal metaconid ridge at the EDJ. It is possible that a cusp was present here, however it is difficult to tell due to poor scan distinction. There is no sign of a DAC at the OES, likely due to wear. At the EDJ there is an interconulid type DAC present.



DAC: Single interconulid type

LAC: None

At the OES there is a medium sized DAC, but no LAC. This is also true of the EDJ, where there is no sign of a LAC but there is an interconulid type DAC.



DAC: None

LAC: None

There is no sign of a DAC or LAC at the EDJ or OES.



DAC: None

LAC: None

There is no DAC at the OES or EDJ. There is no sign of a LAC at the OES and although there is some shouldering on the distal ridge of the metaconid at the EDJ, there is no cusp.



DAC: None

LAC: Single metaconid type

There is no sign of a DAC at the OES or EDJ. There is no LAC at the OES, however at the EDJ there is a very small metaconid type LAC.



DAC: Single entoconid type, single hypoconulid type

LAC: None

This tooth has some breakages in the enamel surface, however it is clear that there are a number of accessory cusps present. In the DAC region, there are two clear DACs at the OES, and a potential third just distal to the hypoconulid. At the EDJ, there is a clear entoconid type DAC. Distal to this, there is a section of the distal marginal ridge that shows heavy shouldering, but does not have a clear cusp tip. Then there is a cusp just distal to the hypoconulid that is here scored as a hypoconulid type DAC, however in the antimere of this tooth it is closer to the hypoconulid itself and may instead be a double hypoconulid. There are some fissures distal to the metaconid at the OES that may suggest the presence of a LAC, however at the EDJ there is no cusp, although there is some shouldering on the distal metaconid ridge.



DAC: Single interconulid type

LAC: Single metaconid type

As in the antimere, there are some breakages in the enamel. There is enamel missing from a potential DAC, and at the EDJ there is a corresponding interconulid type DAC present. Also, there is a cusp directly distal of the hypoconulid such that it appears as a double cusp. This is similar to the appearance of the hypoconulid type DAC in the antimere, however in this tooth the two cusp tips are closer together and approximately equal in height. We therefore consider this as a double hypoconulid, not a hypoconulid type DAC. There is a small LAC just distal to the metaconid at the OES that corresponds to a metaconid type LAC at the EDJ.



DAC: None

LAC: None

There are no clear accessory cusps at the OES or EDJ



DAC: None

LAC: None

There is no LAC visible at the OES or EDJ. At the OES there is a possible DAC, however this is not visible at the EDJ, possibly due to poor scan distinction.



DAC: Single interconulid type

LAC: None

There is a single large DAC at the OES that is present as an interconulid type at the EDJ. There is no sign of a LAC at the OES or EDJ.

Homo erectus (Asia)



DAC: None

LAC: Single metaconid type

There is no DAC at the OES or EDJ. While no LAC can be seen at the OES, there is a small LAC visible at the EDJ on the metaconid distal ridge.



DAC: Double interconulid type

LAC: Single metaconid type

The DAC region is worn at the OES, however two DACs can be seen. These are also present at the EDJ, where they are both interconulid types. There is a single LAC, present at the EDJ and OES, that is a metaconid type.



DAC: Double hypoconulid type

LAC: None

There is no sign of a LAC at the OES. At the EDJ there is shouldering on the distal marginal ridge, but no cusp. There is a double DAC at the OES, and at the EDJ there are two low, broad cusps on the distal ridge of the hypoconulid. These hypoconulid type DACs are very small, and there is a small crack in the dentine of the cusp closer to the hypoconulid, however they are visible in the scan and are both associated with a small accessory ridge running into the occlusal basin.


DAC: None

LAC: None

There is no DAC or LAC at the OES or EDJ.



DAC: Single interconulid type

LAC: None

There is a no LAC at the OES or EDJ. The fissure patterns at the OES suggest the presence of a LAC at the OES, and at the EDJ it is a medium sized interconulid type.



Scan distinction: Moderate

DAC: None

LAC: None

The OES is worn, particularly in the DAC region, making accessory cusp assessment difficult. There is no sign of a LAC at the OES or EDJ. There is a raised section of the distal marginal ridge at the EDJ that may correspond to an interconulid or hypoconulid type DAC.



DAC: Single interconulid type

LAC: Single interconulid type

At the OES there is a clear DAC and LAC. This is replicated at the EDJ, and both are interconulid types.



DAC: Double hypoconulid type

LAC: Single interconulid type

At the OES there are two distinct DACs that, at the EDJ, appear as hypoconulid types. There is a single LAC that is an interconulid type.



Scan distinction: Moderate

DAC: None

LAC: Single interconulid type, single metaconid type

This tooth is quite worn, making accessory cusp assessment from the OES difficult. Equally, some of the distal marginal ridge is worn at the dentine level. In the remaining distal marginal ridge at the EDJ, there is no DAC. The LAC region is better preserved and we find two LACs, one metaconid type and one interconulid type.



DAC: Single interconulid type

LAC: None

There is no LAC present at the OES or EDJ. There is a single DAC present at both OES and EDJ; it is an interconulid type.



DAC: Single hypoconulid type

LAC: None

At the OES there is one clear DAC and a smaller second possible DAC. Only the larger of the two is visible at the EDJ as a hypoconulid type. This cusp is associated with a ridge that runs into the occlusal basin and connects to the entoconid. There is no LAC at the OES or EDJ, however there is an accessory ridge that runs from the metaconid cusp tip to the distal ridge of the metaconid. Unlike the DAC, however, there is no clear cusp at the meeting point of the two ridges.



DAC: Single interconulid type

LAC: Single interconulid type

The enamel is quite worn, however there is a LAC visible at the OES. At the EDJ, it is an interconulid type. The DAC is difficult to assess from the OES, but at the EDJ there is a small interconulid type DAC.





DAC: None

LAC: Metaconid type

The OES is relatively worn, making assessment of accessory cusps difficult, although there is some sign of a LAC. At the EDJ, there is a LAC at the base of the metaconid ridge, and no DAC.



DAC: None

LAC: None

There is no sign of a DAC or LAC at the EDJ or OES.



DAC: None

LAC: None

There is no sign of a DAC or LAC at the EDJ or OES.



DAC: Double hypoconulid type

LAC: Single interconulid type

The OES is quite worn, making assessment of accessory cusps difficult, however there is some suggestion of a DAC. At the EDJ, there is a hypoconulid type DAC near the base of the hypoconulid distal crest. There is a second possible cusp closer to the hypoconulid cusp tip, however it is very small and does not reach the level of a cusp. There is a LAC at the EDJ which is interconulid type, although it is slightly raised on the entoconid side.



DAC: None

LAC: Single metaconid type

The tooth is relatively worn, particularly in the DAC region, and little of the DAC region is preserved at the OES or EDJ, however there is no DAC present in the preserved portion. The LAC region is less worn. No LAC is visible at the OES, but a low, broad metaconid type LAC can be seen at the EDJ.



DAC: None

LAC: Single metaconid type

This tooth is less worn than its antimere in the DAC region, and again there is no DAC present at the OES or EDJ. Although the OES is quite worn, there is some indication of a LAC at on the lingual face of the tooth, and at the EDJ it can be seen that there is a metaconid type LAC present.



DAC: Single hypoconulid type

LAC: Single interconulid type

There is a LAC present at the OES that is close to the entoconid, however at the EDJ it is clear that although it is closer to the entoconid, it is an interconulid type. There are two DACs at the OES, however only one is clearly visible at the EDJ. Both would be hypoconulid types, however the one closer to the hypoconulid is too small to be distinguished from scan noise and so is not scored.