**Supplementary information**

Table 3. Overview of all the 14C results obtained on the bone blanks, VIRI I, VIRI F and the archaeological samples.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Lab number** | **sample name** | **carbon mass (µg)** | **ECHO no** | **F14C** | **error (1σ)** | **14C age  (yr BP)** | **+-(yr)** | **remark** |
| MUSE20006.2.2 | PC-14 blank | 900 | 3450.1.5 | 0.0048\* | 0.0001 | 42880 | 170 | XAD treated |
| MUSE20006.3.2 | PC-14 blank | 880 | 3450.1.6 | 0.0045\* | 0.0001 | 43480 | 180 | XAD treated |
| MUSE20026.1.2 | Hollis mammoth | 960 | 3496.1.6 | 0.0030\* | 0.0001 | 46530 | 220 | XAD treated |
| MUSE20026.2.2 | Hollis mammoth | 920 | 3496.1.7 | 0.0063\* | 0.0001 | 40660 | 160 | XAD treated |
| MUSE20026.3.2 | Hollis mammoth | 990 | 3496.1.8 | 0.0040\* | 0.0001 | 44360 | 170 | XAD treated |
| MUSE20026.4.2 | Hollis mammoth | 980 | 3496.1.9 | 0.0056\* | 0.0002 | 41660 | 240 | XAD treated |
| MUSE20026.5.2 | Hollis mammoth | 1050 | 3496.1.10 | 0.0053\* | 0.0001 | 42070 | 220 | XAD treated |
| MUSE20027.2.1 | VIRI I | 1020 | 1231.2.7 | 0.3530 | 0.0015 | 8365 | 35 | XAD treated |
| MUSE20026.6.2 | Hollis mammoth | 860 | 3496.1.12 | 0.0065\* | 0.0002 | 40500 | 200 | XAD treated |
| MUSE20026.7.2 | Hollis mammoth | 800 | 3496.1.14 | 0.0039\* | 0.0001 | 44500 | 270 | XAD treated |
| MUSE20026.8.2 | Hollis mammoth | 810 | 3496.1.16 | 0.0041\* | 0.0002 | 44220 | 310 | XAD treated |
| MUSE20026.9.2 | Hollis mammoth | 760 | 3496.1.18 | 0.0020\* | 0.0001 | 50030 | 490 | XAD treated |
| MUSE20026.10.2 | Hollis mammoth | 890 | 3496.1.20 | 0.0021\* | 0.0001 | 49560 | 440 | XAD treated |
| MUSE20026.11.2 | Hollis mammoth | 940 | 3496.1.22 | 0.0027\* | 0.0001 | 47660 | 370 | XAD treated |
| MUSE20026.12.2 | Hollis mammoth | 1,010 | 3496.1.24 | 0.0036\* | 0.0002 | 45170 | 350 | XAD treated |
| MUSE20026.13.2 | Hollis mammoth | 660 | 3496.1.26 | 0.0028\* | 0.0002 | 47340 | 440 | XAD treated |
| MUSE20027.3.2 | VIRI I | 950 | 1231.2.9 | 0.3519 | 0.0017 | 8390 | 40 | XAD treated |
| MUSE20032.1.2 | VIRI H | 670 | 1130.2.2 | 0.2995 | 0.0021 | 9680 | 60 | XAD treated |
|  |  |  |  |  |  |  |  |  |
| MUSE21010.10 | VIRI I | 1000 | 1231.3.10 | 0.3526 | 0.0015 | 8375 | 35 | Paraloid\_XAD treatment |
| MUSE21010.10.1 | VIRI I | 1000 | 1231.3.17 | 0.3499 | 0.0015 | 8435 | 35 | Paraloid\_no XAD |
| MUSE21010.11 | VIRI I | 1000 | 1231.3.11 | 0.3543 | 0.0015 | 8335 | 35 | Paraloid\_XAD treatment |
| MUSE21010.12 | VIRI I | 880 | 1231.3.12 | 0.3558 | 0.0015 | 8300 | 35 | Paraloid\_XAD treatment |
| MUSE21010.17 | VIRI I | 890 | 1231.3.13 | 0.3533 | 0.0015 | 8355 | 35 | Shellac\_XAD treatment |
| MUSE21010.17.1 | VIRI I | 760 | 1231.3.18 | 0.3566 | 0.0015 | 8285 | 35 | Shellac\_no XAD |
| MUSE21010.18 | VIRI I | 960 | 1231.3.16 | 0.3528 | 0.0015 | 8370 | 35 | Shellac\_XAD treatment |
| MUSE21010.19 | VIRI I | 1000 | 1231.3.14 | 0.3547 | 0.0015 | 8325 | 35 | Shellac\_XAD treatment |
| MUSE21010.20 | VIRI I | 990 | 1231.3.15 | 0.3516 | 0.0015 | 8395 | 35 | clean VIRI I |
| MUSE21003.18 | Hollis mammoth | 990 | 3496.3.14 | 0.0031\* | 0.0001 | 46520 | 260 | Paraloid\_XAD treatment |
| MUSE21003.18.1 | Hollis mammoth | 1000 | 3496.3.23 | 0.0026\* | 0.0001 | 47960 | 380 | Paraloid\_no XAD |
| MUSE21003.19 | Hollis mammoth | 1000 | 3496.3.15 | 0.0025\* | 0.0001 | 48110 | 420 | Paraloid\_XAD treatment |
| MUSE21003.20 | Hollis mammoth | 970 | 3496.3.16 | 0.0035\* | 0.0001 | 45330 | 310 | Paraloid\_XAD treatment |
| MUSE21003.28 | Hollis mammoth | 1000 | 3496.3.17 | 0.0043\* | 0.0001 | 43790 | 280 | Shellac\_XAD treatment |
| MUSE21003.28.1 | Hollis mammoth | 955 | 3496.3.24 | 0.0102\* | 0.0002 | 36810 | 120 | Shellac\_no XAD |
| MUSE21003.29 | Hollis mammoth | 1000 | 3496.3.18 | 0.0043\* | 0.0001 | 43800 | 230 | Shellac\_XAD treatment |
| MUSE21003.30 | Hollis mammoth | 1000 | 3496.3.19 | 0.0037\* | 0.0001 | 44990 | 210 | Shellac\_XAD treatment |
| MUSE21003.31 | Hollis mammoth | 830 | 3496.3.20 | 0.0032\* | 0.0001 | 46190 | 270 | clean blank correction for VIRI's |
| MUSE21003.13.1 | Hollis mammoth | 1000 | 3496.3.21 | 0.0030\* | 0.0001 | 46690 | 320 | clean blank correction for VIRI's |
| MUSE21003.16.1 | Hollis mammoth | 990 | 3496.3.22 | 0.0041\* | 0.0001 | 44210 | 250 | clean blank correction for VIRI's |
| MUSE21009.2 | VIRI F | 1000 | 4579.1.1 | 0.7307 | 0.0021 | 2520 | 25 | Paraloid\_XAD treatment |
| MUSE21009.2.1 | VIRI F | 930 | 4579.1.8 | 0.7272 | 0.0020 | 2560 | 25 | Paraloid\_no XAD |
| MUSE21009.3 | VIRI F | 900 | 4579.1.2 | 0.7275 | 0.0020 | 2555 | 20 | Paraloid\_XAD treatment |
| MUSE21009.4 | VIRI F | 1000 | 4579.1.3 | 0.7247 | 0.0021 | 2585 | 25 | Paraloid\_XAD treatment |
| MUSE21009.7 | VIRI F | 1000 | 4579.1.4 | 0.7330 | 0.0021 | 2495 | 25 | Shellac\_XAD treatment |
| MUSE21009.7.1 | VIRI F | 1000 | 4579.1.9 | 0.7334 | 0.0021 | 2490 | 25 | Shellac\_no XAD |
| MUSE21009.8 | VIRI F | 970 | 4579.1.5 | 0.7318 | 0.0021 | 2510 | 25 | Shellac\_XAD treatment |
| MUSE21009.9 | VIRI F | 930 | 4579.1.6 | 0.7277 | 0.0020 | 2555 | 25 | Shellac\_XAD treatment |
| MUSE21009.10 | VIRI F | 840 | 4579.1.7 | 0.7341 | 0.0021 | 2485 | 25 | clean VIRI F |
| MUSE21154 | Shellac | 1000 | 4583.1.1 | 1.3503 | 0.0033 | -2415 | 20 |  |
| MUSE21155 | Paraloid | 1000 | 4584.1.1 | 0.0335 | 0.0007 | 27290 | 170 |  |
|  |  |  |  |  |  |  |  |  |
| MUSE20033.1.2 | SC B8 153 147 | 720 | 3532.1.2 | 0.1965 | 0.0015 | 13070 | 60 | XAD |
| MUSE20033.1.1.2 | SC B8 153 147 | 260 | 3707.1.1 | 0.1911 | 0.0013 | 13300 | 50 | no XAD |
| MUSE20033.2.2 | SC B8 153 147 | 740 | 3532.1.4 | 0.1959 | 0.0015 | 13080 | 60 | XAD |

Table 4. Overview of statistical chi square tests comparing 14C ages between the different treatments.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **sample ID** | **14C age** | **error** | **treatment** | **samples** | **T’** | **χ2 (0,05)** | **df** | **conclusion: samples are significantly (at 95% confidence level):** | **remark** |
| Hollis |  |  |  |  |  |  |  |  |  |
| MUSE21003.18 | 46520 | 260 | XAD\_paraloid | 3 | 28.70 | 5.99 | 2 | different | 3 XAD dates paraloid |
| MUSE21003.19 | 48110 | 420 | XAD\_paraloid |  |  |  |  |  |  |
| MUSE21003.20 | 45330 | 310 | XAD\_paraloid |  |  |  |  |  |  |
| MUSE21003.18.1 | 47960 | 380 | no\_XAD\_paraloid | 4 | 42.27 | 7.81 | 3 | different | XAD and no XAD paraloid |
|  |  |  |  |  |  |  |  |  |  |
| MUSE21003.28 | 43790 | 280 | XAD\_shellac | 3 | 18.84 | 5.99 | 2 | different | 3 XAD dates shellac |
| MUSE21003.29 | 43800 | 230 | XAD\_shellac |  |  |  |  |  |  |
| MUSE21003.30 | 44990 | 210 | XAD\_shellac |  |  |  |  |  |  |
| MUSE21003.28.1 | 36810 | 120 | no\_XAD\_shellac | 4 | 1726.36 | 7.81 | 3 | different | XAD and no XAD shellac |
|  |  |  |  |  |  |  |  |  |  |
| MUSE21003.31 | 46190 | 270 | clean |  |  |  |  |  |  |
| MUSE21003.13.1 | 46690 | 320 | clean |  |  |  |  |  |  |
| MUSE21003.16.1 | 44210 | 250 | clean | 3 | 46.98 | 5.99 | 2 | different | 3 XAD blanks |
|  |  |  |  |  |  |  |  |  |  |
| VIRI I |  |  |  |  |  |  |  |  |  |
| MUSE21010.10 | 8375 | 35 | XAD\_paraloid | 3 | 2.30 | 5.99 | 2 | the same | 3 XAD dates paraloid |
| MUSE21010.11 | 8335 | 35 | XAD\_paraloid |  |  |  |  |  |  |
| MUSE21010.12 | 8300 | 35 | XAD\_paraloid |  |  |  |  |  |  |
| MUSE21010.10.1 | 8440 | 35 | no\_XAD\_paraloid | 4 | 8.84 | 7.81 | 3 | different | all 4 dates |
|  |  |  |  |  |  |  |  |  |  |
| MUSE21010.17 | 8355 | 35 | XAD\_shellac | 3 | 0.86 | 5.99 | 2 | the same | 3 XAD dates shellac |
| MUSE21010.18 | 8370 | 35 | XAD\_shellac |  |  |  |  |  |  |
| MUSE21010.19 | 8325 | 35 | XAD\_shellac |  |  |  |  |  |  |
| MUSE21010.17.1 | 8285 | 35 | no\_XAD\_shellac | 4 | 3.44 | 7.81 | 3 | the same | all 4 dates |
|  |  |  |  |  |  |  |  |  |  |
| VIRI F |  |  |  |  |  |  |  |  |  |
| MUSE21009.2 | 2520 | 25 | XAD\_paraloid | 3 | 3.39 | 5.99 | 2 | the same | 3 XAD dates paraloid |
| MUSE21009.3 | 2555 | 20 | XAD\_paraloid |  |  |  |  |  |  |
| MUSE21009.4 | 2585 | 25 | XAD\_paraloid |  |  |  |  |  |  |
| MUSE21009.2.1 | 2560 | 25 | no\_XAD\_paraloid | 4 | 3.44 | 7.81 | 3 | the same | all 4 dates |
|  |  |  |  |  |  |  |  |  |  |
| MUSE21009.7 | 2495 | 25 | XAD\_shellac | 3 | 3.12 | 5.99 | 2 | the same | 3 XAD dates shellac |
| MUSE21009.8 | 2510 | 25 | XAD\_shellac |  |  |  |  |  |  |
| MUSE21009.9 | 2555 | 25 | XAD\_shellac |  |  |  |  |  |  |
| MUSE21009.7.1 | 2490 | 25 | no\_XAD\_shellac | 4 | 4.2 | 7.81 | 3 | the same | all 4 dates |
|  |  |  |  |  |  |  |  |  |  |
| Archaeological bone (SC B8 153 147) | | |  |  |  |  |  |  |  |
| MUSE20033.1.2 | 13070 | 60 | XAD | 2 | 0.014 | 3.84 |  | the same | 2 XAD samples |
| MUSE20033.2.2 | 13080 | 60 | XAD |  |  |  |  |  |  |
| MUSE20033.1.1.2 | 13300 | 50 | No XAD | 5 | 11.79 | 5.99 | 4 | different | all 3 samples |