b1

```
                                100       110       120       130       140       150       160       170
                                                                              ↓  !!↓  !!!   !!  *!↓  *!!  *!   *  ↓
Meca*01    GSHTIQNMYGCDVGPDGRLLRGYSQDSYDGADYIALNEDLRSWTAADTAAQITQRKWEDAGEAERWRNYLEVTCVEWLGRYLENG
Meca*02    ......R.................VA......L..........V..AT...SR...A.D...HE.......L...H......
Meca*03    ......R.................VA......L..........V..AT...SR...A.D...HE.......L...H......
Meca*04    ....F...................R.FA.......................................Y...V.G..........
Meca*05    ......................................................................................
Meca*06    ......R.................VA......L..........V..AT...SR...A.D...HE.......L...H......
Meca*07    ....F.WTSA....A........Q.WA.................................RS...A.....Y.........R.H....
                                    ^                                                   ^
Mean*01    GSHTIQTMYGCDVGPDGRLLRGYSQVAYDGADYLTLNEDLRSWTAADTAAQISQRKCEDAGVAERYRNYVEGTCVEWLGRYLENG
Mean*02    ......................................................................................
Mean*03    ......................................................................................
Mean*04    ......R.................................................W.....................G.......
Mean*05    ......R.................................................W.......LE....................
Mean*06    ......R.................................................W.......LE....................
Mean*07    ......R.................................................W.......LE....................
Mean*08    ......R.................................................W.....................
Mean*09    ......R.................A..........V..AT...R..W.A.DE..HE...L.V..L...H......
Mean*10    ...................R.F...............................LE....................
Mean*11    ......................................................................................
Mean*12    ......R.................A..........V..AT...R..W.A.DE..HE...L.V..L...H......
Mean*13    ......R.....E..........D.HS......IA.................T...W....E...W...L.................
Mean*14    ....F.WTSA....A........Q.W.......IA.........V......TRS.W.A..E......L.V.....R.H....
Mean*15    ....F.WTSA....A........Q.W.......IA.........V......TRS.W.A..E......L.V.....R.H....
Mean*16    ......NV......R.........DS...G..IA.............G...TRS.W.A..E...W...L.V....S.R...M.
Mean*PS01  ...S..R.....M.................A..~......V..AT...R..W.A.DE..HE...L.V..L...H......
Mean*PS02  ...S..R.....M.................A..~......V..AT...R..W.A.DE..HE...L.V..L...H......
Mean*PS03  ...S..R.....M.................A..~......V..AT...R..W.A.DE..HE...L.V..L...H......
Mean*PS04  ...S..R.....M.................A..~......V..AT...R..W.A.DE..HE...L.V..L...H......
Mean*PS05  ...S..R.....M.................A..~......V..AT...R..W.A.DE..HE...L.V..L...H......
Mean*PS06  ...S..R.....M.................A..~......V..AT...R..W.A.DE..HE...L.V..L...H......
Mean*PS07  ......R.....................R..R.........................................R.....
                                        ^  ^                                                ^
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Supplementary Figure S1b1