a

| 32 | 29 | 5 | 4 | 31 | 30 | 28 | 7 | 6 | 67 |

| 43 | 44 | 45 | 33 | 36 | 37 | 38 | 25 | 22 | 21 |

40 Hz

1 s

| 72 | 8 | 1 | 2 | 57 | 18 | 26 | 85 | 65 | 87 |

b

Number of spikes

Picture number

c

Hit rate

False positive rate

Figure 1 | A single unit in the left posterior hippocampus activated exclusively by different views of the actress Jennifer Aniston.

a, Responses to 30 of the 87 images are shown. There were no statistically significant responses to the other 57 pictures. For each picture, the corresponding raster plots (the order of trial number is from top to bottom) and post-stimulus time histograms are given. Vertical dashed lines indicate image onset and offset (1 s apart). Note that owing to insurmountable copyright problems, all original images were replaced in this and all subsequent figures by very similar ones (same subject, animal or building, similar pose, similar colour, line drawing, and so on). b, The median

responses to all pictures. The image numbers correspond to those in a. The two horizontal lines show the mean baseline activity (0.02 spikes) and the mean plus 5 s.d. (0.82 spikes). Pictures of Jennifer Aniston are denoted by red bars. c, The associated ROC curve (red trace) testing the hypothesis that the cell responded in an invariant manner to all seven photographs of Jennifer Aniston (hits) but not to other images (including photographs of Jennifer Aniston and Brad Pitt together; false positives). The grey lines correspond to the same ROC analysis for 99 surrogate sets of 7 randomly chosen pictures (P , 0.01). The area under the red curve is 1.00.