|  |  |  |
| --- | --- | --- |
| **Area** | **Positive finding** | **Negative Finding** |
| 10 |  | [1] |
| 11 | [2-5] | [6] |
| 12 | [2-5,7-10] |  |
| 13 | [2-5] | [6] |
| 14 | [2-5] | [6] |
| 1 |  | [11-13] |
| 24a | [4,14-18] |  |
| 24b | [4,14-18] |  |
| 24c | [4,14-18] |  |
| 24d | [4,14-18] |  |
| 2 | [19] | [11,12] |
| 3 |  | [11-13] |
| 45a | [7,8,10,20-22] |  |
| 45b | [7,8,10,20,21] |  |
| 46d | [7-10,21,23-41] |  |
| 46v | [7-10,21,23-25,27,30,31,33-41] |  |
| 5 | [42] |  |
| 7a | [28,29,32,43-46] | [47] |
| 8b | [26,48] |  |
| 8l | [25,27,30,31,33,35,36,38,45,49-54] |  |
| 8m | [25,27,29-33,35,36,38,45,48-54] |  |
| 8r | [25,27,38,45,49,52-55] |  |
| 9 | [28] |  |
| 9/46d | [5,7-10,18,21,23-28,34-40,45,48,50,51,53,56-60] | [61,62] |
| 9/46v | [5,7-10,18,21-28,34-40,45,48,50,51,53,56-60] | [61,62] |
| Core | [63] | [64-66] |
| Entorhinal | [67] |  |
| F2 | [11,48,68] |  |
| F3 | [69,70] |  |
| F4 | [71] |  |
| F5 | [71-73] |  |
| F6 | [69,70] |  |
| F7 | [11,59,68,74-76] |  |
| LB | [65] |  |
| LIP | [18,77-82] |  |
| MST | [27] | [47] |
| MT |  | [27,47,62,81,83] |
| Perirhinal | [84] |  |
| S2 | [12,13] |  |
| STPc | [63] |  |
| STPl | [63] |  |
| STPr | [63] |  |
| Subiculum | [85,86] |  |
| Temporal Pole | [84] | [87] |
| TEam a | [7,88-91] |  |
| TEam p | [7,88-91] |  |
| TEad | [7,88-93] | [94] |
| TEav | [7,84,88-91,95] |  |
| TEpd | [92,93] | [65,94] |
| V1 | [96,97] | [91,98,99] |
| V2 | [99] |  |
| V4 | [99,100] | [47,98,101] |
| VIP | [60] |  |
| Superior Colliculus | [102] |  |
| Mediodorsal nucleus of thalamus | [103] |  |
| Ventral posterior lateral nucleus of thalamus |  | [104] |
| Caudate nucleus | [105] |  |
| Hippocampus | [85,86] |  |

1 Tsujimoto, S. *et al.* (2010) Evaluating self-generated decisions in frontal pole cortex of monkeys. *Nature Neuroscience* 13, 120–126

2 Rosenkilde, C.E. *et al.* (1981) Single cell activity in ventral prefrontal cortex of behaving monkeys. *Brain Research* 209, 375–394

3 Hikosaka, K. and Watanabe, M. (2000) Delay Activity of Orbital and Lateral Prefrontal Neurons of the Monkey Varying with Different Rewards. *Cereb. Cortex* 10, 263–271

4 Kennerley, S.W. and Wallis, J.D. (2009) Encoding of reward and space during a working memory task in the orbitofrontal cortex and anterior cingulate sulcus. *Journal of Neurophysiology* 102, 3352–3364

5 Cai, X. and Padoa-Schioppa, C. (2014) Contributions of orbitofrontal and lateral prefrontal cortices to economic choice and the good-to-action transformation. *Neuron* 81, 1140–1151

6 Tremblay, L. and Schultz, W. (1999) Relative reward preference in primate orbitofrontal cortex. *Nature* 398, 704–708

7 Freedman, D.J. *et al.* (2003) A comparison of primate prefrontal and inferior temporal cortices during visual categorization. *J. Neurosci.* 23, 5235–5246

8 Romanski, L.M. and Goldman-Rakic, P.S. (2002) An auditory domain in primate prefrontal cortex. *Nature Neuroscience* 5, 15–16

9 Wallis, J.D. *et al.* (2001) Single neurons in prefrontal cortex encode abstract rules. *Nature* 411, 953–956

10 Freedman, D.J. *et al.* (2001) Categorical representation of visual stimuli in the primate prefrontal cortex. *Science* 291, 312–316

11 Rossi-Pool, R. *et al.* (2016) Emergence of an abstract categorical code enabling the discrimination of temporally structured tactile stimuli. *PNAS* 113, E7966–E7975

12 Lemus, L. *et al.* (2010) Do sensory cortices process more than one sensory modality during perceptual judgments? *Neuron* 67, 335–348

13 Salinas, E. *et al.* (2000) Periodicity and Firing Rate As Candidate Neural Codes for the Frequency of Vibrotactile Stimuli. *J. Neurosci.* 20, 5503–5515

14 Akkal, D. *et al.* (2002) Comparison of neuronal activity in the rostral supplementary and cingulate motor areas during a task with cognitive and motor demands. *Eur J Neurosci* 15, 887–904

15 Isomura, Y. *et al.* (2003) Neural coding of "attention for action" and “response selection” in primate anterior cingulate cortex. *J. Neurosci.* 23, 8002–8012

16 Procyk, E. and Joseph, J.P. (2001) Characterization of serial order encoding in the monkey anterior cingulate sulcus. *Eur J Neurosci* 14, 1041–1046

17 Niki, H. and Watanabe, M. (1976) Prefrontal unit activity and delayed response: Relation to cue location versus direction of response. *Brain Research*

18 Bernacchia, A. *et al.* (2011) A reservoir of time constants for memory traces in cortical neurons. *Nature Neuroscience* 14, 366–372

19 Zhou, Y.D. and Fuster, J.M. (1996) Mnemonic neuronal activity in somatosensory cortex. *PNAS* 93, 10533–10537

20 Romo, R. *et al.* (1999) Neuronal correlates of parametric working memory in the prefrontal cortex. *Nature* 399, 470–473

21 Hwang, J. and Romanski, L.M. (2015) Prefrontal neuronal responses during audiovisual mnemonic processing. *J. Neurosci.* 35, 960–971

22 Miller, E.K. *et al.* (1996) Neural mechanisms of visual working memory in prefrontal cortex of the macaque. *Journal of Neurosience* 16, 5154–5167

23 Fuster, J.M. and Alexander, G.E. (1971) Neuron activity related to short-term memory. *Science* 173, 652–654

24 Kubota, K. and Niki, H. (1971) Prefrontal cortical unit activity and delayed alternation performance in monkeys. *Journal of Neurophysiology* 34, 337–347

25 Markowitz, D.A. *et al.* (2015) Multiple component networks support working memory in prefrontal cortex. *PNAS* 112, 11084–11089

26 Wang, L. *et al.* (2015) Differential roles of delay-period neural activity in the monkey dorsolateral prefrontal cortex in visual-haptic crossmodal working memory. *PNAS* 112, E214–9

27 Mendoza-Halliday, D. *et al.* (2014) Sharp emergence of feature-selective sustained activity along the dorsal visual pathway. *Nature Neuroscience* 17, 1255–1262

28 Crowe, D.A. *et al.* (2013) Prefrontal neurons transmit signals to parietal neurons that reflect executive control of cognition. *Nature Neuroscience* 16, 1484–1491

29 Katsuki, F. and Constantinidis, C. (2013) Time course of functional connectivity in primate dorsolateral prefrontal and posterior parietal cortex during working memory. *PLoS ONE* 8, e81601

30 Qi, X.-L. and Constantinidis, C. (2012) Correlated discharges in the primate prefrontal cortex before and after working memory training. *Eur J Neurosci* 36, 3538–3548

31 Zhou, X. *et al.* (2011) Cholinergic modulation of working memory activity in primate prefrontal cortex. *Journal of Neurophysiology* 106, 2180–2188

32 Qi, X.-L. *et al.* (2010) Comparison of neural activity related to working memory in primate dorsolateral prefrontal and posterior parietal cortex. *Front Syst Neurosci* 4, 12

33 Meyer, T. *et al.* (2007) Persistent Discharges in the Prefrontal Cortex of Monkeys Naive to Working Memory Tasks. *Cerebral Cortex* 17, i70–i76

34 Lebedev, M.A. *et al.* (2004) Representation of attended versus remembered locations in prefrontal cortex. *PLoS Biol.* 2, e365

35 Constantinidis, C. *et al.* (2001) Coding specificity in cortical microcircuits: a multiple-electrode analysis of primate prefrontal cortex. *J. Neurosci.* 21, 3646–3655

36 Constantinidis, C. *et al.* (2001) The sensory nature of mnemonic representation in the primate prefrontal cortex. *Nature Neuroscience* 4, 311–316

37 Funahashi, S. *et al.* (1993) Prefrontal neuronal activity in rhesus monkeys performing a delayed anti-saccade task. *Nature* 365, 753–756

38 Funahashi, S. *et al.* (1989) Mnemonic coding of visual space in the monkey's dorsolateral prefrontal cortex. *Journal of Neurophysiology* 61, 331–349

39 Batuev, A.S. *et al.* (1985) Comparative characteristics of unit activity in the prefrontal and parietal areas during delayed performance in monkeys. *Behav. Brain Res.* 16, 57–70

40 Kojima, S. and Goldman-Rakic, P.S. (1982) Delay-related activity of prefrontal neurons in rhesus monkeys performing delayed response. *Brain Research* 248, 43–49

41 Bodner, M. *et al.* (1996) Auditory memory cells in dorsolateral prefrontal cortex. *Neuroreport* 7, 1905

42 Koch, K.W. and Fuster, J.M. (1989) Unit activity in monkey parietal cortex related to haptic perception and temporary memory. *Experimental Brain Research* 76, 292–306

43 Constantinidis, C. and Steinmetz, M.A. (1996) Neuronal activity in posterior parietal area 7a during the delay periods of a spatial memory task. *Journal of Neurophysiology* 76, 1352–1355

44 Crowe, D.A. *et al.* (2010) Rapid sequences of population activity patterns dynamically encode task-critical spatial information in parietal cortex. *J. Neurosci.* 30, 11640–11653

45 Chafee, M.V. and Goldman-Rakic, P.S. (2000) Inactivation of parietal and prefrontal cortex reveals interdependence of neural activity during memory-guided saccades. *Journal of Neurophysiology* 83, 1550–1566

46 Andersen, R.A. *et al.* (1987) Neurons of area 7 activated by both visual stimuli and oculomotor behavior. *Experimental Brain Research* 67, 316–322

47 Ferrera, V.P. *et al.* (1994) Responses of neurons in the parietal and temporal visual pathways during a motion task. *The Journal of Neuroscience* 14, 6171–6186

48 Fuster, J.M. *et al.* (2000) Cross-modal and cross-temporal association in neurons of frontal cortex. *Nature* 405, 347–351

49 Zhou, X. *et al.* (2016) Neural correlates of working memory development in adolescent primates. *Nat Comms* 7, 13423

50 Rainer, G. *et al.* (1998) Memory fields of neurons in the primate prefrontal cortex. *PNAS*

51 Rainer, G. *et al.* (1998) Selective representation of relevant information by neurons in the primate prefrontal cortex. *Nature* 393, 577–579

52 Chafee, M.V. and Goldman-Rakic, P.S. (1998) Matching patterns of activity in primate prefrontal area 8a and parietal area 7ip neurons during a spatial working memory task. *Journal of Neurophysiology* 79, 2919–2940

53 Carlson, S. *et al.* (1997) Dissociation of mnemonic coding and other functional neuronal processing in the monkey prefrontal cortex. *Journal of Neurophysiology* 77, 761–774

54 Leavitt, M.L. *et al.* (2017) Correlated variability modifies working memory fidelity in primate prefrontal neuronal ensembles. *PNAS* 114, E2494–E2503

55 Armstrong, K.M. *et al.* (2009) Selection and Maintenance of Spatial Information by Frontal Eye Field Neurons. *J. Neurosci.* 29, 15621–15629

56 Lara, A.H. and Wallis, J.D. (2014) Executive control processes underlying multi-item working memory. *Nature Neuroscience* DOI: 10.1038/nn.3702

57 Takeda, K. and Funahashi, S. (2002) Prefrontal Task-Related Activity Representing Visual Cue Location or Saccade Direction in Spatial Working Memory Tasks. *Journal of Neurophysiology* 87, 567–588

58 Meyer, T. *et al.* (2011) Stimulus selectivity in dorsal and ventral prefrontal cortex after training in working memory tasks. *J. Neurosci.* 31, 6266–6276

59 di Pellegrino, G. and Wise, S.P. (1993) Visuospatial versus visuomotor activity in the premotor and prefrontal cortex of a primate. *The Journal of Neuroscience* 13, 1227–1243

60 Jacob, S.N. and Nieder, A. (2014) Complementary Roles for Primate Frontal and Parietal Cortex in Guarding Working Memory from Distractor Stimuli. *Neuron* 83, 226–237

61 Plakke, B. *et al.* (2013) Neural correlates of auditory recognition memory in primate lateral prefrontal cortex. *Neuroscience* 244, 62–76

62 Zaksas, D. and Pasternak, T. (2006) Directional signals in the prefrontal cortex and in area MT during a working memory for visual motion task. *J. Neurosci.* 26, 11726–11742

63 Gottlieb, Y. *et al.* (1989) Single unit activity in the auditory cortex of a monkey performing a short term memory task. *Experimental Brain Research* 74, 139–148

64 Bigelow, J. *et al.* (2014) Neural correlates of short-term memory in primate auditory cortex. *Frontiers in Neuroscience* 8, 250

65 Scott, B.H. *et al.* (2014) Neural correlates of auditory short-term memory in rostral superior temporal cortex. *Current Biology* 24, 2767–2775

66 Lemus, L. *et al.* (2009) Neural codes for perceptual discrimination of acoustic flutter in the primate auditory cortex. *PNAS* 106, 9471–9476

67 Suzuki, W.A. *et al.* (1997) Object and place memory in the macaque entorhinal cortex. *Journal of Neurophysiology* 78, 1062–1081

68 Cisek, P. and Kalaska, J.F. (2005) Neural correlates of reaching decisions in dorsal premotor cortex: specification of multiple direction choices and final selection of action. *Neuron* 45, 801–814

69 Hernandez, A. *et al.* (2002) Temporal evolution of a decision-making process in medial premotor cortex. *Neuron* 33, 959–972

70 Lemus, L. *et al.* (2007) Neural correlates of a postponed decision report. *PNAS* 104, 17174–17179

71 Graziano, M.S. *et al.* (1997) Coding the locations of objects in the dark. *Science* 277, 239–241

72 Romo, R. *et al.* (2004) Neuronal correlates of a perceptual decision in ventral premotor cortex. *Neuron* 41, 165–173

73 Lemus, L. *et al.* (2009) Neural encoding of auditory discrimination in ventral premotor cortex. *PNAS* 106, 14640–14645

74 Vergara, J. *et al.* (2016) A Neural Parametric Code for Storing Information of More than One Sensory Modality in Working Memory. *Neuron* 89, 54–62

75 Russo, G.S. and Bruce, C.J. (1996) Neurons in the supplementary eye field of rhesus monkeys code visual targets and saccadic eye movements in an oculocentric coordinate system. *Journal of Neurophysiology* 76, 825–848

76 Olson, C.R. and Tremblay, L. (2000) Macaque supplementary eye field neurons encode object-centered locations relative to both continuous and discontinuous objects. *Journal of Neurophysiology* 83, 2392–2411

77 Pesaran, B. *et al.* (2002) Temporal structure in neuronal activity during working memory in macaque parietal cortex. *Nature Neuroscience* 5, 805–811

78 Powell, K.D. and Goldberg, M.E. (2000) Response of neurons in the lateral intraparietal area to a distractor flashed during the delay period of a memory-guided saccade. *Journal of Neurophysiology* 84, 301–310

79 Colby, C.L. *et al.* (1996) Visual, presaccadic, and cognitive activation of single neurons in monkey lateral intraparietal area. *Journal of Neurophysiology* 76, 2841–2852

80 Gnadt, J.W. and Andersen, R.A. (1988) Memory related motor planning activity in posterior parietal cortex of macaque. *Experimental Brain Research* 70, 216–220

81 Freedman, D.J. and Assad, J.A. (2006) Experience-dependent representation of visual categories in parietal cortex. *Nature* 443, 85–88

82 Seo, H. *et al.* (2009) Lateral Intraparietal Cortex and Reinforcement Learning during a Mixed-Strategy Game. *J. Neurosci.* 29, 7278–7289

83 Bisley, J.W. *et al.* (2004) Activity of neurons in cortical area MT during a memory for motion task. *Journal of Neurophysiology* 91, 286–300

84 Miyashita, Y. and Chang, H.S. (1988) Neuronal correlate of pictorial short-term memory in the primate temporal cortex. *Nature* 331, 68–70

85 Cahusac, P.M. *et al.* (1989) Responses of hippocampal formation neurons in the monkey related to delayed spatial response and object-place memory tasks. *Behav. Brain Res.* 33, 229–240

86 Watanabe, T. and Niki, H. (1985) Hippocampal unit activity and delayed response in the monkey. *Brain Research* 325, 241–254

87 Ng, C.-W. *et al.* (2014) Neural correlates of auditory recognition memory in the primate dorsal temporal pole. *Journal of Neurophysiology* 111, 455–469

88 Chelazzi, L. *et al.* (1998) Responses of neurons in inferior temporal cortex during memory-guided visual search. *Journal of Neurophysiology* 80, 2918–2940

89 Miller, E.K. and Desimone, R. (1994) Parallel neuronal mechanisms for short-term memory. *Science* 263, 520–522

90 Miller, E.K. *et al.* (1991) A neural mechanism for working and recognition memory in inferior temporal cortex. *Science* 254, 1377–1379

91 Fuster, J.M. (1990) Inferotemporal units in selective visual attention and short-term memory. *Journal of Neurophysiology* 64, 681–697

92 Baylis, G.C. and Rolls, E.T. (1987) Responses of neurons in the inferior temporal cortex in short term and serial recognition memory tasks. *Experimental Brain Research* 65, 614–622

93 Fuster, J.M. and Jervey, J.P. (1981) Inferotemporal neurons distinguish and retain behaviorally relevant features of visual stimuli. *Science* 212, 952–955

94 Mikami, A. and Kubota, K. (1980) Inferotemporal neuron activities and color discrimination with delay. *Brain Research* 182, 65–78

95 Woloszyn, L. and Sheinberg, D.L. (2009) Neural dynamics in inferior temporal cortex during a visual working memory task. *J. Neurosci.* 29, 5494–5507

96 Supèr, H. *et al.* (2001) A neural correlate of working memory in the monkey primary visual cortex. *Science* 293, 120–124

97 van Kerkoerle, T. *et al.* (2017) Layer-specificity in the effects of attention and working memory on activity in primary visual cortex. *Nat Comms* 8, 13804

98 McAdams, C.J. and Maunsell, J.H. (1999) Effects of attention on orientation-tuning functions of single neurons in macaque cortical area V4. *The Journal of Neuroscience* 19, 431–441

99 Luck, S.J. *et al.* (1997) Neural Mechanisms of Spatial Selective Attention in Areas V1, V2, and V4 of Macaque Visual Cortex. *Journal of Neurophysiology* 77, 24–42

100 Hayden, B.Y. and Gallant, J.L. (2013) Working memory and decision processes in visual area v4. *Frontiers in Neuroscience* 7, 18

101 Chelazzi, L. *et al.* (2001) Responses of neurons in macaque area V4 during memory-guided visual search. *Cereb. Cortex* 11, 761–772

102 Takaura, K. *et al.* (2011) Neural substrate of spatial memory in the superior colliculus after damage to the primary visual cortex. *J. Neurosci.* 31, 4233–4241

103 Watanabe, Y. and Funahashi, S. (2004) Neuronal activity throughout the primate mediodorsal nucleus of the thalamus during oculomotor delayed-responses. I. Cue-, delay-, and response-period activity. *Journal of Neurophysiology* 92, 1738–1755

104 Camarillo, L. *et al.* (2012) Coding perceptual discrimination in the somatosensory thalamus. *PNAS* 109, 21093–21098

105 Hikosaka, O. *et al.* (1989) Functional properties of monkey caudate neurons. I. Activities related to saccadic eye movements. *Journal of Neurophysiology* 61, 780–798