Downloaded from UvA-DARE, the institutional repository of the University of Amsterdam (UvA)
http://dare.uva.nl/document/216951

File ID	216951
Filename	References

SOURCE (OR PART OF THE FOLLOWING SOURCE):

Type	Dissertation
Title	Stress, emotional learning and AMPA receptors: from behavior to molecule
Author	M. Zhou
Faculty	Faculty of Science
Year	2011
Pages	200
ISBN	9789088912764

FULL BIBLIOGRAPHIC DETAILS:
http://dare.uva.nl/record/378088

Copyright

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other then for strictly personal, individual use.

UvA-DARE is a service provided by the library of the University of Amsterdam (http://dare.uva.nl)

References

Abrari, K., Rashidy-Pour, A., Semnanian, S., Fathollahi, Y., and Jadid, M. (2009). Post-training administration of corticosterone enhances consolidation of contextual fear memory and hippocampal long-term potentiation in rats. Neurobiol Learn Mem *91*, 260-265.

Adamec, R., Muir, C., Grimes, M., and Pearcey, K. (2007). Involvement of noradrenergic and corticoid receptors in the consolidation of the lasting anxiogenic effects of predator stress. Behav Brain Res *179*, 192-207.

Adesnik, H., Nicoll, R.A., and England, P.M. (2005). Photoinactivation of native AMPA receptors reveals their real-time trafficking. Neuron *48*, 977-985.

Akama, K.T., and McEwen, B.S. (2003). Estrogen stimulates postsynaptic density-95 rapid protein synthesis via the Akt/protein kinase B pathway. J Neurosci *23*, 2333-2339.

Akirav, I., Kozenicky, M., Tal, D., Sandi, C., Venero, C., and Richter-Levin, G. (2004). A facilitative role for corticosterone in the acquisition of a spatial task under moderate stress. Learn Mem *11*, 188-195.

Alberini, C.M. (2005). Mechanisms of memory stabilization: are consolidation and reconsolidation similar or distinct processes? Trends Neurosci *28*, 51-56.

Alfarez, D.N., Wiegert, O., Joels, M., and Krugers, H.J. (2002). Corticosterone and stress reduce synaptic potentiation in mouse hippocampal slices with mild stimulation. Neuroscience *115*, 1119-1126.

Allen, J.P., and Allen, C.F. (1974). Role of the amygdaloid complexes in the stress-induced release of ACTH in the rat. Neuroendocrinology *15*, 220-230.

Anagnostaras, S.G., Gale, G.D., and Fanselow, M.S. (2001). Hippocampus and contextual fear conditioning: recent controversies and advances.

Hippocampus *11*, 8-17.

Archer, T., Ogren, S.O., Fuxe, K., Agnati, L.F., and Eneroth, P. (1981). On the interactive role of central noradrenaline neurons and corticosterone in two-way active avoidance acquisition in the rat. Neurosci Lett *27*, 341-346.

Arriza, J.L., Simerly, R.B., Swanson, L.W., and Evans, R.M. (1988). The neuronal mineralocorticoid receptor as a mediator of glucocorticoid response. Neuron *1*, 887-900.

Arriza, J.L., Weinberger, C., Cerelli, G., Glaser, T.M., Handelin, B.L., Housman, D.E., and Evans, R.M. (1987). Cloning of human mineralocorticoid receptor complementary DNA: structural and functional kinship with the glucocorticoid receptor. Science *237*, 268-275.

Ashby, M.C., Maier, S.R., Nishimune, A., and Henley, J.M. (2006). Lateral diffusion drives constitutive exchange of AMPA receptors at dendritic spines and is regulated by spine morphology. J Neurosci *26*, 7046-7055.

Barrett, D., and Gonzalez-Lima, F. (2004). Behavioral effects of metyrapone on Pavlovian extinction. Neurosci Lett *371*, 91-96.

Barria, A., Derkach, V., and Soderling, T. (1997a). Identification of the Ca2+/calmodulin-dependent protein kinase II regulatory phosphorylation site in the alpha-amino-3-hydroxyl-5-methyl-4-isoxazole-propionate-type glutamate receptor. J Biol Chem *272*, 32727-32730.

Barria, A., Muller, D., Derkach, V., Griffith, L.C., and Soderling, T.R. (1997b). Regulatory phosphorylation of AMPA-type glutamate receptors by CaM-KII during long-term potentiation. Science *276*, 2042-2045.

Barry, M.F., and Ziff, E.B. (2002). Receptor trafficking and the plasticity of excitatory synapses. Curr Opin Neurobiol *12*, 279-286.

Barsegyan, A., Mackenzie, S.M., Kurose, B.D., McGaugh, J.L., and Roozendaal, B. (2010). Glucocorticoids in the prefrontal cortex enhance memory consolidation and impair working memory by a common neural mechanism. Proc Natl Acad Sci U S A *107*, 16655-16660.

Bartos, J.A., Ulrich, J.D., Li, H., Beazely, M.A., Chen, Y., Macdonald, J.F.,

and Hell, J.W. (2010). Postsynaptic clustering and activation of Pyk2 by PSD-95. J Neurosci *30*, 449-463.

Bayer, H. (2010). An abundance of grid cells. Nat Neurosci *13*, 916.

Beato, M., Truss, M., and Chavez, S. (1996). Control of transcription by steroid hormones. Ann N Y Acad Sci *784*, 93-123.

Beattie, E.C., Carroll, R.C., Yu, X., Morishita, W., Yasuda, H., von Zastrow, M., and Malenka, R.C. (2000). Regulation of AMPA receptor endocytosis by a signaling mechanism shared with LTD. Nat Neurosci *3*, 1291-1300.

Beique, J.C., and Andrade, R. (2003). PSD-95 regulates synaptic transmission and plasticity in rat cerebral cortex. J Physiol *546*, 859-867.

Belanoff, J.K., Flores, B.H., Kalezhan, M., Sund, B., and Schatzberg, A.F. (2001). Rapid reversal of psychotic depression using mifepristone. J Clin Psychopharmacol *21*, 516-521.

Belanoff, J.K., Rothschild, A.J., Cassidy, F., DeBattista, C., Baulieu, E.E., Schold, C., and Schatzberg, A.F. (2002). An open label trial of C-1073 (mifepristone) for psychotic major depression. Biol Psychiatry *52*, 386-392.

Berger, S., Wolfer, D.P., Selbach, O., Alter, H., Erdmann, G., Reichardt, H.M., Chepkova, A.N., Welzl, H., Haas, H.L., Lipp, H.P*., et al.* (2006). Loss of the limbic mineralocorticoid receptor impairs behavioral plasticity. Proc Natl Acad Sci U S A *103*, 195-200.

Berthoz, A. (1997). Parietal and hippocampal contribution to topokinetic and topographic memory. Philos Trans R Soc Lond B Biol Sci *352*, 1437-1448.

Beylin, A.V., and Shors, T.J. (2003). Glucocorticoids are necessary for enhancing the acquisition of associative memories after acute stressful experience. Horm Behav *43*, 124-131.

Bitran, D., Shiekh, M., Dowd, J.A., Dugan, M.M., and Renda, P. (1998). Corticosterone is permissive to the anxiolytic effect that results from the blockade of hippocampal mineralocorticoid receptors. Pharmacol Biochem Behav *60*, 879-887.

Bliss, T.V., and Collingridge, G.L. (1993). A synaptic model of memory:

long-term potentiation in the hippocampus. Nature *361*, 31-39.

Bliss, T.V., and Lomo, T. (1973). Long-lasting potentiation of synaptic transmission in the dentate area of the anaesthetized rabbit following stimulation of the perforant path. J Physiol *232*, 331-356.

Boehm, J., Kang, M.G., Johnson, R.C., Esteban, J., Huganir, R.L., and Malinow, R. (2006). Synaptic incorporation of AMPA receptors during LTP is controlled by a PKC phosphorylation site on GluR1. Neuron *51*, 213-225.

Bohn, M.C., Howard, E., Vielkind, U., and Krozowski, Z. (1991). Glial cells express both mineralocorticoid and glucocorticoid receptors. J Steroid Biochem Mol Biol *40*, 105-111.

Bohus, B., and de Kloet, E.R. (1981). Adrenal steroids and extinction behavior: antagonism by progesterone, deoxycorticosterone and dexamethasone of a specific effect of corticosterone. Life Sci *28*, 433-440.

Borrell, J., de Kloet, E.R., and Bohus, B. (1984). Corticosterone decreases the efficacy of adrenaline to affect passive avoidance retention of adrenalectomized rats. Life Sci *34*, 99-104.

Bouton, M.E. (2004). Context and behavioral processes in extinction. Learn Mem *11*, 485-494.

Bouton, M.E., and Bolles, R.C. (1979). Role of conditioned contextual stimuli in reinstatement of extinguished fear. J Exp Psychol Anim Behav Process *5*, 368-378.

Bracha, H.S., Ralston, T.C., Matsukawa, J.M., Williams, A.E., and Bracha, A.S. (2004). Does "fight or flight" need updating? Psychosomatics *45*, 448-449.

Bremner, J.D., Elzinga, B., Schmahl, C., and Vermetten, E. (2008). Structural and functional plasticity of the human brain in posttraumatic stress disorder. Prog Brain Res *167*, 171-186.

Brinks, V., de Kloet, E.R., and Oitzl, M.S. (2009). Corticosterone facilitates extinction of fear memory in BALB/c mice but strengthens cue related fear in C57BL/6 mice. Exp Neurol *216*, 375-382.

Brinks, V., van der Mark, M.H., de Kloet, E.R., and Oitzl, M.S. (2007). Differential MR/GR activation in mice results in emotional states beneficial or impairing for cognition. Neural Plast *2007*, 90163.

Burnashev, N., Monyer, H., Seeburg, P.H., and Sakmann, B. (1992). Divalent ion permeability of AMPA receptor channels is dominated by the edited form of a single subunit. Neuron *8*, 189-198.

Cahill, L., and McGaugh, J.L. (1998). Mechanisms of emotional arousal and lasting declarative memory. Trends Neurosci *21*, 294-299.

Cahill, L., Prins, B., Weber, M., and McGaugh, J.L. (1994). Beta-adrenergic activation and memory for emotional events. Nature *371*, 702-704.

Cammalleri, M., Lutjens, R., Berton, F., King, A.R., Simpson, C., Francesconi, W., and Sanna, P.P. (2003). Time-restricted role for dendritic activation of the mTOR-p70S6K pathway in the induction of late-phase long-term potentiation in the CA1. Proc Natl Acad Sci U S A *100*, 14368-14373.

Carroll, R.C., Beattie, E.C., Xia, H., Luscher, C., Altschuler, Y., Nicoll, R.A., Malenka, R.C., and von Zastrow, M. (1999a). Dynamin-dependent endocytosis of ionotropic glutamate receptors. Proc Natl Acad Sci U S A *96*, 14112-14117.

Carroll, R.C., Lissin, D.V., von Zastrow, M., Nicoll, R.A., and Malenka, R.C. (1999b). Rapid redistribution of glutamate receptors contributes to long-term depression in hippocampal cultures. Nat Neurosci *2*, 454-460.

Carroll, R.C., Nicoll, R.A., and Malenka, R.C. (1998). Effects of PKA and PKC on miniature excitatory postsynaptic currents in CA1 pyramidal cells. J Neurophysiol *80*, 2797-2800.

Caudal, D., Godsil, B.P., Mailliet, F., Bergerot, D., and Jay, T.M. (2010). Acute stress induces contrasting changes in AMPA receptor subunit phosphorylation within the prefrontal cortex, amygdala and hippocampus. PLoS One *5*, e15282.

Chameau, P., Qin, Y., Spijker, S., Smit, G., and Joels, M. (2007).

Glucocorticoids specifically enhance L-type calcium current amplitude and affect calcium channel subunit expression in the mouse hippocampus. J Neurophysiol *97*, 5-14.

Charlton, B.G. (1990). Adrenal cortical innervation and glucocorticoid secretion. J Endocrinol *126*, 5-8.

Chavez-Noriega, L.E., and Stevens, C.F. (1994). Increased transmitter release at excitatory synapses produced by direct activation of adenylate cyclase in rat hippocampal slices. J Neurosci *14*, 310-317.

Chen, H.X., and Roper, S.N. (2003). PKA and PKC enhance excitatory synaptic transmission in human dentate gyrus. J Neurophysiol *89*, 2482-2488.

Chenal, J., and Pellerin, L. (2007). Noradrenaline enhances the expression of the neuronal monocarboxylate transporter MCT2 by translational activation via stimulation of PI3K/Akt and the mTOR/S6K pathway. J Neurochem *102*, 389-397.

Chrousos, G.P. (1998). Stressors, stress, and neuroendocrine integration of the adaptive response. The 1997 Hans Selye Memorial Lecture. Ann N Y Acad Sci *851*, 311-335.

Clem, R.L., and Huganir, R.L. (2010). Calcium-permeable AMPA receptor dynamics mediate fear memory erasure. Science *330*, 1108-1112.

Collingridge, G.L., Olsen, R.W., Peters, J., and Spedding, M. (2009). A nomenclature for ligand-gated ion channels. Neuropharmacology *56*, 2-5.

Conboy, L., and Sandi, C. (2010). Stress at learning facilitates memory formation by regulating AMPA receptor trafficking through a glucocorticoid action. Neuropsychopharmacology *35*, 674-685.

Conway-Campbell, B.L., McKenna, M.A., Wiles, C.C., Atkinson, H.C., de Kloet, E.R., and Lightman, S.L. (2007). Proteasome-dependent down-regulation of activated nuclear hippocampal glucocorticoid receptors determines dynamic responses to corticosterone. Endocrinology *148*, 5470-5477.

Cordero, M.I., and Sandi, C. (1998). A role for brain glucocorticoid receptors in contextual fear conditioning: dependence upon training intensity. Brain Res *786*, 11-17.

Coste, S.C., Kesterson, R.A., Heldwein, K.A., Stevens, S.L., Heard, A.D., Hollis, J.H., Murray, S.E., Hill, J.K., Pantely, G.A., Hohimer, A.R.*, et al.* (2000). Abnormal adaptations to stress and impaired cardiovascular function in mice lacking corticotropin-releasing hormone receptor-2. Nat Genet *24*, 403-409.

Coussens, C.M., Kerr, D.S., and Abraham, W.C. (1997). Glucocorticoid receptor activation lowers the threshold for NMDA-receptor-dependent homosynaptic long-term depression in the hippocampus through activation of voltage-dependent calcium channels. J Neurophysiol *78*, 1-9.

Cukor, J., Spitalnick, J., Difede, J., Rizzo, A., and Rothbaum, B.O. (2009). Emerging treatments for PTSD. Clin Psychol Rev *29*, 715-726.

de Kloet, E.R., Joels, M., and Holsboer, F. (2005). Stress and the brain: from adaptation to disease. Nat Rev Neurosci *6*, 463-475.

de Kloet, E.R., Karst, H., and Joels, M. (2008). Corticosteroid hormones in the central stress response: quick-and-slow. Front Neuroendocrinol *29*, 268-272.

de Kloet, E.R., Oitzl, M.S., and Joels, M. (1999). Stress and cognition: are corticosteroids good or bad guys? Trends Neurosci *22*, 422-426.

de Kloet, E.R., and Sarabdjitsingh, R.A. (2008). Everything has rhythm: focus on glucocorticoid pulsatility. Endocrinology *149*, 3241-3243.

De Kloet, E.R., Vreugdenhil, E., Oitzl, M.S., and Joels, M. (1998). Brain corticosteroid receptor balance in health and disease. Endocr Rev *19*, 269-301.

De Kloet, R., Wallach, G., and McEwen, B.S. (1975). Differences in corticosterone and dexamethasone binding to rat brain and pituitary. Endocrinology *96*, 598-609.

de Oliveira Alvares, L., Engelke, D.S., Diehl, F., Scheffer-Teixeira, R.,

Haubrich, J., de Freitas Cassini, L., Molina, V.A., and Quillfeldt, J.A. (2010). Stress response recruits the hippocampal endocannabinoid system for the modulation of fear memory. Learn Mem *17*, 202-209.

de Quervain, D.J., Aerni, A., and Roozendaal, B. (2007). Preventive effect of beta-adrenoceptor blockade on glucocorticoid-induced memory retrieval deficits. Am J Psychiatry *164*, 967-969.

de Quervain, D.J., Aerni, A., Schelling, G., and Roozendaal, B. (2009). Glucocorticoids and the regulation of memory in health and disease. Front Neuroendocrinol *30*, 358-370.

de Quervain, D.J., Henke, K., Aerni, A., Treyer, V., McGaugh, J.L., Berthold, T., Nitsch, R.M., Buck, A., Roozendaal, B., and Hock, C. (2003). Glucocorticoid-induced impairment of declarative memory retrieval is associated with reduced blood flow in the medial temporal lobe. Eur J Neurosci *17*, 1296-1302.

de Quervain, D.J., Roozendaal, B., and McGaugh, J.L. (1998). Stress and glucocorticoids impair retrieval of long-term spatial memory. Nature *394*, 787-790.

de Quervain, D.J., Roozendaal, B., Nitsch, R.M., McGaugh, J.L., and Hock, C. (2000). Acute cortisone administration impairs retrieval of long-term declarative memory in humans. Nat Neurosci *3*, 313-314.

Dev, K.K., Nishimune, A., Henley, J.M., and Nakanishi, S. (1999). The protein kinase C alpha binding protein PICK1 interacts with short but not long form alternative splice variants of AMPA receptor subunits. Neuropharmacology *38*, 635-644.

Di, S., Malcher-Lopes, R., Halmos, K.C., and Tasker, J.G. (2003). Nongenomic glucocorticoid inhibition via endocannabinoid release in the hypothalamus: a fast feedback mechanism. J Neurosci *23*, 4850-4857.

Diamond, D.M., Bennett, M.C., Fleshner, M., and Rose, G.M. (1992). Inverted-U relationship between the level of peripheral corticosterone and the magnitude of hippocampal primed burst potentiation. Hippocampus *2*,

421-430.

Diorio, D., Viau, V., and Meaney, M.J. (1993). The role of the medial prefrontal cortex (cingulate gyrus) in the regulation of hypothalamic-pituitary-adrenal responses to stress. J Neurosci *13*, 3839-3847.

Doeller, C.F., Barry, C., and Burgess, N. (2010). Evidence for grid cells in a human memory network. Nature *463*, 657-661.

Doyere, V., and Laroche, S. (1992). Linear relationship between the maintenance of hippocampal long-term potentiation and retention of an associative memory. Hippocampus *2*, 39-48.

Droste, S.K., de Groote, L., Atkinson, H.C., Lightman, S.L., Reul, J.M., and Linthorst, A.C. (2008). Corticosterone levels in the brain show a distinct ultradian rhythm but a delayed response to forced swim stress. Endocrinology *149*, 3244-3253.

Dudai, Y. (1996). Consolidation: fragility on the road to the engram. Neuron *17*, 367-370.

Dudai, Y. (2006). Reconsolidation: the advantage of being refocused. Curr Opin Neurobiol *16*, 174-178.

Effting, M., and Kindt, M. (2007). Contextual control of human fear associations in a renewal paradigm. Behav Res Ther *45*, 2002-2018.

Ehlers, M.D. (2000). Reinsertion or degradation of AMPA receptors determined by activity-dependent endocytic sorting. Neuron *28*, 511-525.

Ehlers, M.D., Heine, M., Groc, L., Lee, M.C., and Choquet, D. (2007). Diffusional trapping of GluR1 AMPA receptors by input-specific synaptic activity. Neuron *54*, 447-460.

Eisenberg, M., Kobilo, T., Berman, D.E., and Dudai, Y. (2003). Stability of retrieved memory: inverse correlation with trace dominance. Science *301*, 1102-1104.

El-Husseini, A.E., Schnell, E., Chetkovich, D.M., Nicoll, R.A., and Bredt, D.S. (2000). PSD-95 involvement in maturation of excitatory synapses. Science

290, 1364-1368.

Esteban, J.A., Shi, S.H., Wilson, C., Nuriya, M., Huganir, R.L., and Malinow, R. (2003). PKA phosphorylation of AMPA receptor subunits controls synaptic trafficking underlying plasticity. Nat Neurosci *6*, 136-143.

Evans, R.M., and Arriza, J.L. (1989). A molecular framework for the actions of glucocorticoid hormones in the nervous system. Neuron *2*, 1105-1112.

Ferguson, D., and Sapolsky, R. (2007). Mineralocorticoid receptor overexpression differentially modulates specific phases of spatial and nonspatial memory. J Neurosci *27*, 8046-8052.

Ferry, B., Roozendaal, B., and McGaugh, J.L. (1999). Basolateral amygdala noradrenergic influences on memory storage are mediated by an interaction between beta- and alpha1-adrenoceptors. J Neurosci *19*, 5119-5123.

Flores, B.H., Kenna, H., Keller, J., Solvason, H.B., and Schatzberg, A.F. (2006). Clinical and biological effects of mifepristone treatment for psychotic depression. Neuropsychopharmacology *31*, 628-636.

Foa, E.B., Dancu, C.V., Hembree, E.A., Jaycox, L.H., Meadows, E.A., and Street, G.P. (1999). A comparison of exposure therapy, stress inoculation training, and their combination for reducing posttraumatic stress disorder in female assault victims. J Consult Clin Psychol *67*, 194-200.

Foote, S.L., Bloom, F.E., and Aston-Jones, G. (1983). Nucleus locus ceruleus: new evidence of anatomical and physiological specificity. Physiol Rev *63*, 844-914.

Gerges, N.Z., Backos, D.S., and Esteban, J.A. (2004). Local control of AMPA receptor trafficking at the postsynaptic terminal by a small GTPase of the Rab family. J Biol Chem *279*, 43870-43878.

Gerges, N.Z., Backos, D.S., Rupasinghe, C.N., Spaller, M.R., and Esteban, J.A. (2006). Dual role of the exocyst in AMPA receptor targeting and insertion into the postsynaptic membrane. EMBO J *25*, 1623-1634.

Gersons, B.P., and Carlier, I.V. (1992). Post-traumatic stress disorder: the history of a recent concept. Br J Psychiatry *161*, 742-748.

Glodowski, D.R., Chen, C.C., Schaefer, H., Grant, B.D., and Rongo, C. (2007). RAB-10 regulates glutamate receptor recycling in a cholesterol-dependent endocytosis pathway. Mol Biol Cell *18*, 4387-4396.

Gobert, D., Topolnik, L., Azzi, M., Huang, L., Badeaux, F., Desgroseillers, L., Sossin, W.S., and Lacaille, J.C. (2008). Forskolin induction of late-LTP and up-regulation of 5' TOP mRNAs translation via mTOR, ERK, and PI3K in hippocampal pyramidal cells. J Neurochem *106*, 1160-1174.

Gourley, S.L., Kedves, A.T., Olausson, P., and Taylor, J.R. (2009). A history of corticosterone exposure regulates fear extinction and cortical NR2B, GluR2/3, and BDNF. Neuropsychopharmacology *34*, 707-716.

Graf, P., and Schacter, D.L. (1985). Implicit and explicit memory for new associations in normal and amnesic subjects. J Exp Psychol Learn Mem Cogn *11*, 501-518.

Groc, L., Choquet, D., and Chaouloff, F. (2008). The stress hormone corticosterone conditions AMPAR surface trafficking and synaptic potentiation. Nat Neurosci *11*, 868-870.

Gwinup, G. (1967). The hypothalamic-pituitary-adrenocortical system. Clinical evaluation by pharmacologic techniques. Calif Med *106*, 159-164.

Hanley, J.G., Khatri, L., Hanson, P.I., and Ziff, E.B. (2002). NSF ATPase and alpha-/beta-SNAPs disassemble the AMPA receptor-PICK1 complex. Neuron *34*, 53-67.

Hayashi, Y., Shi, S.H., Esteban, J.A., Piccini, A., Poncer, J.C., and Malinow, R. (2000). Driving AMPA receptors into synapses by LTP and CaMKII: requirement for GluR1 and PDZ domain interaction. Science *287*, 2262-2267.

Herman, J.P., and Spencer, R. (1998). Regulation of hippocampal glucocorticoid receptor gene transcription and protein expression in vivo. J Neurosci *18*, 7462-7473.

Herrero, A.I., Sandi, C., and Venero, C. (2006). Individual differences in anxiety trait are related to spatial learning abilities and hippocampal

expression of mineralocorticoid receptors. Neurobiol Learn Mem *86*, 150-159.

Hoeffer, C.A., and Klann, E. (2009). mTOR signaling: at the crossroads of plasticity, memory and disease. Trends Neurosci *33*, 67-75.

Hoeffer, C.A., and Klann, E. (2010). mTOR signaling: at the crossroads of plasticity, memory and disease. Trends Neurosci *33*, 67-75.

Hollenberg, S.M., Weinberger, C., Ong, E.S., Cerelli, G., Oro, A., Lebo, R., Thompson, E.B., Rosenfeld, M.G., and Evans, R.M. (1985). Primary structure and expression of a functional human glucocorticoid receptor cDNA. Nature *318*, 635-641.

Hollmann, M., and Heinemann, S. (1994). Cloned glutamate receptors. Annu Rev Neurosci *17*, 31-108.

Hoogenraad, C.C., Milstein, A.D., Ethell, I.M., Henkemeyer, M., and Sheng, M. (2005). GRIP1 controls dendrite morphogenesis by regulating EphB receptor trafficking. Nat Neurosci *8*, 906-915.

Hu, H., Real, E., Takamiya, K., Kang, M.G., Ledoux, J., Huganir, R.L., and Malinow, R. (2007). Emotion enhances learning via norepinephrine regulation of AMPA-receptor trafficking. Cell *131*, 160-173.

Humeau, Y., Reisel, D., Johnson, A.W., Borchardt, T., Jensen, V., Gebhardt, C., Bosch, V., Gass, P., Bannerman, D.M., Good, M.A.*, et al.* (2007). A pathway-specific function for different AMPA receptor subunits in amygdala long-term potentiation and fear conditioning. J Neurosci *27*, 10947-10956.

Izquierdo, I., Dalmaz, C., Dias, R.D., and Godoy, M.G. (1988). Memory facilitation by posttraining and pretest ACTH, epinephrine, and vasopressin administration: two separate effects. Behav Neurosci *102*, 803-806.

Jacobson, L., and Sapolsky, R. (1991). The role of the hippocampus in feedback regulation of the hypothalamic-pituitary-adrenocortical axis. Endocr Rev *12*, 118-134.

Jewell, C.M., Webster, J.C., Burnstein, K.L., Sar, M., Bodwell, J.E., and Cidlowski, J.A. (1995). Immunocytochemical analysis of hormone mediated

nuclear translocation of wild type and mutant glucocorticoid receptors. J Steroid Biochem Mol Biol *55*, 135-146.

Ji, J., and Maren, S. (2007). Hippocampal involvement in contextual modulation of fear extinction. Hippocampus *17*, 749-758.

Jin, X.C., Lu, Y.F., Yang, X.F., Ma, L., and Li, B.M. (2007). Glucocorticoid receptors in the basolateral nucleus of amygdala are required for postreactivation reconsolidation of auditory fear memory. Eur J Neurosci *25*, 3702-3712.

Joels, M. (1999). Effects of corticosteriod hormones in the hippocampus. Acta Physiol Scand *167*, A3.

Joels, M. (2006). Corticosteroid effects in the brain: U-shape it. Trends Pharmacol Sci *27*, 244-250.

Joels, M. (2010). Impact of glucocorticoids on brain function: Relevance for mood disorders. Psychoneuroendocrinology.

Joels, M., and Baram, T.Z. (2009). The neuro-symphony of stress. Nat Rev Neurosci *10*, 459-466.

Joels, M., and de Kloet, E.R. (1989). Effects of glucocorticoids and norepinephrine on the excitability in the hippocampus. Science *245*, 1502-1505.

Joels, M., and de Kloet, E.R. (1990). Mineralocorticoid receptor-mediated changes in membrane properties of rat CA1 pyramidal neurons in vitro. Proc Natl Acad Sci U S A *87*, 4495-4498.

Joels, M., and de Kloet, E.R. (1994). Mineralocorticoid and glucocorticoid receptors in the brain. Implications for ion permeability and transmitter systems. Prog Neurobiol *43*, 1-36.

Joels, M., Karst, H., DeRijk, R., and de Kloet, E.R. (2008). The coming out of the brain mineralocorticoid receptor. Trends Neurosci *31*, 1-7.

Joels, M., Pu, Z., Wiegert, O., Oitzl, M.S., and Krugers, H.J. (2006). Learning under stress: how does it work? Trends Cogn Sci *10*, 152-158.

Joels, M., Velzing, E., Nair, S., Verkuyl, J.M., and Karst, H. (2003). Acute

stress increases calcium current amplitude in rat hippocampus: temporal changes in physiology and gene expression. Eur J Neurosci *18*, 1315-1324.

Joiner, M.L., Lise, M.F., Yuen, E.Y., Kam, A.Y., Zhang, M., Hall, D.D., Malik, Z.A., Qian, H., Chen, Y., Ulrich, J.D.*, et al.* (2010). Assembly of a beta2-adrenergic receptor--GluR1 signalling complex for localized cAMP signalling. EMBO J *29*, 482-495.

Kademian, S.M., Bignante, A.E., Lardone, P., McEwen, B.S., and Volosin, M. (2005). Biphasic effects of adrenal steroids on learned helplessness behavior induced by inescapable shock. Neuropsychopharmacology *30*, 58-66.

Kakegawa, W., Tsuzuki, K., Yoshida, Y., Kameyama, K., and Ozawa, S. (2004). Input- and subunit-specific AMPA receptor trafficking underlying long-term potentiation at hippocampal CA3 synapses. Eur J Neurosci *20*, 101-110.

Kapitein, L.C., Schlager, M.A., Kuijpers, M., Wulf, P.S., van Spronsen, M., MacKintosh, F.C., and Hoogenraad, C.C. (2010). Mixed microtubules steer dynein-driven cargo transport into dendrites. Curr Biol *20*, 290-299.

Karst, H., Berger, S., Erdmann, G., Schutz, G., and Joels, M. (2010a). Metaplasticity of amygdalar responses to the stress hormone corticosterone. Proc Natl Acad Sci U S A, Epub ahead of print.

Karst, H., Berger, S., Erdmann, G., Schutz, G., and Joels, M. (2010b). Metaplasticity of amygdalar responses to the stress hormone corticosterone. Proc Natl Acad Sci U S A *107*, 14449-14454.

Karst, H., Berger, S., Turiault, M., Tronche, F., Schutz, G., and Joels, M. (2005). Mineralocorticoid receptors are indispensable for nongenomic modulation of hippocampal glutamate transmission by corticosterone. Proc Natl Acad Sci U S A *102*, 19204-19207.

Karst, H., Berger, S., Turiault, M., Tronche, F., Schutz, G., and Joels, M. (2005a). Mineralocorticoid receptors are indispensable for nongenomic modulation of hippocampal glutamate transmission by corticosterone. Proc

Natl Acad Sci U S A *102*, 19204-19207.

Karst, H., and Joels, M. (2005). Corticosterone slowly enhances miniature excitatory postsynaptic current amplitude in mice CA1 hippocampal cells. J Neurophysiol *94*, 3479-3486.

Karst, H., and Joels, M. (2005b). Corticosterone slowly enhances miniature excitatory postsynaptic current amplitude in mice CA1 hippocampal cells. J Neurophysiol *94*, 3479-3486.

Kauer, J.A., and Malenka, R.C. (2006). LTP: AMPA receptors trading places. Nat Neurosci *9*, 593-594.

Keinanen, K., Wisden, W., Sommer, B., Werner, P., Herb, A., Verdoorn, T.A., Sakmann, B., and Seeburg, P.H. (1990). A family of AMPA-selective glutamate receptors. Science *249*, 556-560.

Kerr, D.S., Campbell, L.W., Hao, S.Y., and Landfield, P.W. (1989). Corticosteroid modulation of hippocampal potentials: increased effect with aging. Science *245*, 1505-1509.

Kessels, H.W., and Malinow, R. (2009). Synaptic AMPA receptor plasticity and behavior. Neuron *61*, 340-350.

Kim, J.J., and Diamond, D.M. (2002). The stressed hippocampus, synaptic plasticity and lost memories. Nat Rev Neurosci *3*, 453-462.

Kim, J.J., and Fanselow, M.S. (1992). Modality-specific retrograde amnesia of fear. Science *256*, 675-677.

Kindt, M., Soeter, M., and Vervliet, B. (2009). Beyond extinction: erasing human fear responses and preventing the return of fear. Nat Neurosci *12*, 256-258.

Koenig, H.N., and Olive, M.F. (2004). The glucocorticoid receptor antagonist mifepristone reduces ethanol intake in rats under limited access conditions. Psychoneuroendocrinology *29*, 999-1003.

Kopin, I.J. (1995). Definitions of stress and sympathetic neuronal responses. Ann N Y Acad Sci *771*, 19-30.

Kornau, H.C., Schenker, L.T., Kennedy, M.B., and Seeburg, P.H. (1995).

Domain interaction between NMDA receptor subunits and the postsynaptic density protein PSD-95. Science *269*, 1737-1740.

Krugers, H.J., Hoogenraad, C.C., and Groc, L. (2010). Stress hormones and AMPA receptor trafficking in synaptic plasticity and memory. Nat Rev Neurosci *11*, 675-681.

Kumar, G., Couper, A., O'Brien, T.J., Salzberg, M.R., Jones, N.C., Rees, S.M., and Morris, M.J. (2007). The acceleration of amygdala kindling epileptogenesis by chronic low-dose corticosterone involves both mineralocorticoid and glucocorticoid receptors. Psychoneuroendocrinology *32*, 834-842.

Lai, M., Horsburgh, K., Bae, S.E., Carter, R.N., Stenvers, D.J., Fowler, J.H., Yau, J.L., Gomez-Sanchez, C.E., Holmes, M.C., Kenyon, C.J.*, et al.* (2007). Forebrain mineralocorticoid receptor overexpression enhances memory, reduces anxiety and attenuates neuronal loss in cerebral ischaemia. Eur J Neurosci *25*, 1832-1842.

LeDoux, J.E. (1995). Emotion: clues from the brain. Annu Rev Psychol *46*, 209-235.

LeDoux, J.E. (2000). Emotion circuits in the brain. Annu Rev Neurosci *23*, 155-184.

Lee, E.H., Hung, H.C., Lu, K.T., Chen, W.H., and Chen, H.Y. (1992). Protein synthesis in the hippocampus associated with memory facilitation by corticotropin-releasing factor in rats. Peptides *13*, 927-937.

Lee, H.K., Barbarosie, M., Kameyama, K., Bear, M.F., and Huganir, R.L. (2000). Regulation of distinct AMPA receptor phosphorylation sites during bidirectional synaptic plasticity. Nature *405*, 955-959.

Lee, H.K., Takamiya, K., Han, J.S., Man, H., Kim, C.H., Rumbaugh, G., Yu, S., Ding, L., He, C., Petralia, R.S.*, et al.* (2003). Phosphorylation of the AMPA receptor GluR1 subunit is required for synaptic plasticity and retention of spatial memory. Cell *112*, 631-643.

Lee, J.L., Milton, A.L., and Everitt, B.J. (2006). Reconsolidation and

extinction of conditioned fear: inhibition and potentiation. J Neurosci *26*, 10051-10056.

Lee, S.H., Simonetta, A., and Sheng, M. (2004). Subunit rules governing the sorting of internalized AMPA receptors in hippocampal neurons. Neuron *43*, 221-236.

Lee, Y.R., Park, J., Yu, H.N., Kim, J.S., Youn, H.J., and Jung, S.H. (2005). Up-regulation of PI3K/Akt signaling by 17beta-estradiol through activation of estrogen receptor-alpha, but not estrogen receptor-beta, and stimulates cell growth in breast cancer cells. Biochem Biophys Res Commun *336*, 1221-1226.

Leonard, A.S., Lim, I.A., Hemsworth, D.E., Horne, M.C., and Hell, J.W. (1999). Calcium/calmodulin-dependent protein kinase II is associated with the N-methyl-D-aspartate receptor. Proc Natl Acad Sci U S A *96*, 3239-3244.

Leutgeb, J.K., Leutgeb, S., Treves, A., Meyer, R., Barnes, C.A., McNaughton, B.L., Moser, M.B., and Moser, E.I. (2005). Progressive transformation of hippocampal neuronal representations in "morphed" environments. Neuron *48*, 345-358.

Liebmann, L., Karst, H., and Joels, M. (2009). Effects of corticosterone and the beta-agonist isoproterenol on glutamate receptor-mediated synaptic currents in the rat basolateral amygdala. Eur J Neurosci *30*, 800-807.

Lightman, S.L., and Conway-Campbell, B.L. (2010). The crucial role of pulsatile activity of the HPA axis for continuous dynamic equilibration. Nat Rev Neurosci *11*, 710-718.

Lightman, S.L., Wiles, C.C., Atkinson, H.C., Henley, D.E., Russell, G.M., Leendertz, J.A., McKenna, M.A., Spiga, F., Wood, S.A., and Conway-Campbell, B.L. (2008). The significance of glucocorticoid pulsatility. Eur J Pharmacol *583*, 255-262.

Lisman, J.E., and Zhabotinsky, A.M. (2001). A model of synaptic memory: a CaMKII/PP1 switch that potentiates transmission by organizing an AMPA

receptor anchoring assembly. Neuron *31*, 191-201.

Liu, W., Yuen, E.Y., and Yan, Z. (2010). The stress hormone corticosterone increases synaptic alpha-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid (AMPA) receptors via serum- and glucocorticoid-inducible kinase (SGK) regulation of the GDI-Rab4 complex. J Biol Chem *285*, 6101-6108.

Lledo, P.M., Hjelmstad, G.O., Mukherji, S., Soderling, T.R., Malenka, R.C., and Nicoll, R.A. (1995). Calcium/calmodulin-dependent kinase II and long-term potentiation enhance synaptic transmission by the same mechanism. Proc Natl Acad Sci U S A *92*, 11175-11179.

Lomo, T. (2003). The discovery of long-term potentiation. Philos Trans R Soc Lond B Biol Sci *358*, 617-620.

Lømo, T. (1966). Frequency potentiation of excitatory synaptic activity in the dentate area of the hippocampal formation. Acta physiol scand *68 (suppl. 277)*.

Lu, N.Z., Wardell, S.E., Burnstein, K.L., Defranco, D., Fuller, P.J., Giguere, V., Hochberg, R.B., McKay, L., Renoir, J.M., Weigel, N.L.*, et al.* (2006). International Union of Pharmacology. LXV. The pharmacology and classification of the nuclear receptor superfamily: glucocorticoid, mineralocorticoid, progesterone, and androgen receptors. Pharmacol Rev *58*, 782-797.

Lu, W., and Ziff, E.B. (2005). PICK1 interacts with ABP/GRIP to regulate AMPA receptor trafficking. Neuron *47*, 407-421.

Lupien, S.J., and McEwen, B.S. (1997). The acute effects of corticosteroids on cognition: integration of animal and human model studies. Brain Res Brain Res Rev *24*, 1-27.

Maguire, E.A., Gadian, D.G., Johnsrude, I.S., Good, C.D., Ashburner, J., Frackowiak, R.S., and Frith, C.D. (2000). Navigation-related structural change in the hippocampi of taxi drivers. Proc Natl Acad Sci U S A *97*, 4398-4403.

Mahut, H., Zola-Morgan, S., and Moss, M. (1982). Hippocampal resections

impair associative learning and recognition memory in the monkey. J Neurosci *2*, 1214-1220.

Makino, H., and Malinow, R. (2009). AMPA receptor incorporation into synapses during LTP: the role of lateral movement and exocytosis. Neuron *64*, 381-390.

Malenka, R.C. (2003). Synaptic plasticity and AMPA receptor trafficking. Ann N Y Acad Sci *1003*, 1-11.

Malenka, R.C., and Nicoll, R.A. (1999). Long-term potentiation--a decade of progress? Science *285*, 1870-1874.

Malinow, R., and Malenka, R.C. (2002). AMPA receptor trafficking and synaptic plasticity. Annu Rev Neurosci *25*, 103-126.

Mamiya, N., Fukushima, H., Suzuki, A., Matsuyama, Z., Homma, S., Frankland, P.W., and Kida, S. (2009). Brain region-specific gene expression activation required for reconsolidation and extinction of contextual fear memory. J Neurosci *29*, 402-413.

Mammen, A.L., Kameyama, K., Roche, K.W., and Huganir, R.L. (1997). Phosphorylation of the alpha-amino-3-hydroxy-5-methylisoxazole4-propionic acid receptor GluR1 subunit by calcium/calmodulin-dependent kinase II. J Biol Chem *272*, 32528-32533.

Man, H.Y., Sekine-Aizawa, Y., and Huganir, R.L. (2007). Regulation of {alpha}-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid receptor trafficking through PKA phosphorylation of the Glu receptor 1 subunit. Proc Natl Acad Sci U S A *104*, 3579-3584.

Man, H.Y., Wang, Q., Lu, W.Y., Ju, W., Ahmadian, G., Liu, L., D'Souza, S., Wong, T.P., Taghibiglou, C., Lu, J.*, et al.* (2003). Activation of PI3-kinase is required for AMPA receptor insertion during LTP of mEPSCs in cultured hippocampal neurons. Neuron *38*, 611-624.

Maren, S. (2008). Pavlovian fear conditioning as a behavioral assay for hippocampus and amygdala function: cautions and caveats. Eur J Neurosci

28, 1661-1666.

Marschner, A., Kalisch, R., Vervliet, B., Vansteenwegen, D., and Buchel, C. (2008). Dissociable roles for the hippocampus and the amygdala in human cued versus context fear conditioning. J Neurosci *28*, 9030-9036.

Martin, S., Henley, J.M., Holman, D., Zhou, M., Wiegert, O., van Spronsen, M., Joels, M., Hoogenraad, C.C., and Krugers, H.J. (2009). Corticosterone alters AMPAR mobility and facilitates bidirectional synaptic plasticity. PLoS One *4*, e4714.

Matsuo, N., Reijmers, L., and Mayford, M. (2008). Spine-type-specific recruitment of newly synthesized AMPA receptors with learning. Science *319*, 1104-1107.

McEwen, B.S., and Gianaros, P.J. (2010). Central role of the brain in stress and adaptation: links to socioeconomic status, health, and disease. Ann N Y Acad Sci *1186*, 190-222.

McGaugh, J.L. (2000). Memory--a century of consolidation. Science *287*, 248-251.

McGaugh, J.L., and Roozendaal, B. (2002). Role of adrenal stress hormones in forming lasting memories in the brain. Curr Opin Neurobiol *12*, 205-210.

McIntyre, C.K., Hatfield, T., and McGaugh, J.L. (2002a). Amygdala norepinephrine levels after training predict inhibitory avoidance retention performance in rats. Eur J Neurosci *16*, 1223-1226.

McIntyre, C.K., Pal, S.N., Marriott, L.K., and Gold, P.E. (2002b). Competition between memory systems: acetylcholine release in the hippocampus correlates negatively with good performance on an amygdala-dependent task. J Neurosci *22*, 1171-1176.

McKernan, M.G., and Shinnick-Gallagher, P. (1997). Fear conditioning induces a lasting potentiation of synaptic currents in vitro. Nature *390*, 607-611.

McReynolds, J.R., Donowho, K., Abdi, A., McGaugh, J.L., Roozendaal, B.,

and McIntyre, C.K. (2010). Memory-enhancing corticosterone treatment increases amygdala norepinephrine and Arc protein expression in hippocampal synaptic fractions. Neurobiol Learn Mem *93*, 312-321.

Miesfeld, R., Rusconi, S., Godowski, P.J., Maler, B.A., Okret, S., Wikstrom, A.C., Gustafsson, J.A., and Yamamoto, K.R. (1986). Genetic complementation of a glucocorticoid receptor deficiency by expression of cloned receptor cDNA. Cell *46*, 389-399.

Migues, P.V., Hardt, O., Wu, D.C., Gamache, K., Sacktor, T.C., Wang, Y.T., and Nader, K. (2010). PKMzeta maintains memories by regulating GluR2-dependent AMPA receptor trafficking. Nat Neurosci *13*, 630-634.

Mizuno, K., and Giese, K.P. (2005). Hippocampus-dependent memory formation: do memory type-specific mechanisms exist? J Pharmacol Sci *98*, 191-197.

Monfils, M.H., Cowansage, K.K., Klann, E., and LeDoux, J.E. (2009). Extinction-reconsolidation boundaries: key to persistent attenuation of fear memories. Science *324*, 951-955.

Moreira, F.A., and Lutz, B. (2008). The endocannabinoid system: emotion, learning and addiction. Addict Biol *13*, 196-212.

Morris, R.G., Davis, S., and Butcher, S.P. (1990). Hippocampal synaptic plasticity and NMDA receptors: a role in information storage? Philos Trans R Soc Lond B Biol Sci *329*, 187-204.

Morris, R.G., Garrud, P., Rawlins, J.N., and O'Keefe, J. (1982). Place navigation impaired in rats with hippocampal lesions. Nature *297*, 681-683.

Muller, M.B., Zimmermann, S., Sillaber, I., Hagemeyer, T.P., Deussing, J.M., Timpl, P., Kormann, M.S., Droste, S.K., Kuhn, R., Reul, J.M.*, et al.* (2003). Limbic corticotropin-releasing hormone receptor 1 mediates anxiety-related behavior and hormonal adaptation to stress. Nat Neurosci *6*, 1100-1107.

Muller, R.U., Ranck, J.B., Jr., and Taube, J.S. (1996). Head direction cells: properties and functional significance. Curr Opin Neurobiol *6*, 196-206.

Munck, A., Mendel, D.B., Smith, L.I., and Orti, E. (1990). Glucocorticoid

receptors and actions. Am Rev Respir Dis *141*, S2-10.

Myers, K.M., and Davis, M. (2002). Behavioral and neural analysis of extinction. Neuron *36*, 567-584.

Nadel, L. (1991). The hippocampus and space revisited. Hippocampus *1*, 221-229.

Nader, K., Schafe, G.E., and Le Doux, J.E. (2000a). Fear memories require protein synthesis in the amygdala for reconsolidation after retrieval. Nature *406*, 722-726.

Nader, K., Schafe, G.E., and LeDoux, J.E. (2000b). The labile nature of consolidation theory. Nat Rev Neurosci *1*, 216-219.

Nakamura, Y., Wood, C.L., Patton, A.P., Jaafari, N., Henley, J.M., Mellor, J.R., and Hanley, J.G. (2011). PICK1 inhibition of the Arp2/3 complex controls dendritic spine size and synaptic plasticity. EMBO J *30*, 719-730.

Neves, G., Cooke, S.F., and Bliss, T.V. (2008). Synaptic plasticity, memory and the hippocampus: a neural network approach to causality. Nat Rev Neurosci *9*, 65-75.

Nishimune, A., Isaac, J.T., Molnar, E., Noel, J., Nash, S.R., Tagaya, M., Collingridge, G.L., Nakanishi, S., and Henley, J.M. (1998). NSF binding to GluR2 regulates synaptic transmission. Neuron *21*, 87-97.

Nowak, L., Bregestovski, P., Ascher, P., Herbet, A., and Prochiantz, A. (1984). Magnesium gates glutamate-activated channels in mouse central neurones. Nature *307*, 462-465.

O'Keefe, J., and Dostrovsky, J. (1971). The hippocampus as a spatial map. Preliminary evidence from unit activity in the freely-moving rat. Brain Res *34*, 171-175.

Oitzl, M.S., Champagne, D.L., van der Veen, R., and de Kloet, E.R. (2010). Brain development under stress: hypotheses of glucocorticoid actions revisited. Neurosci Biobehav Rev *34*, 853-866.

Oitzl, M.S., and de Kloet, E.R. (1992). Selective corticosteroid antagonists modulate specific aspects of spatial orientation learning. Behav Neurosci

106, 62-71.

Oitzl, M.S., de Kloet, E.R., Joels, M., Schmid, W., and Cole, T.J. (1997). Spatial learning deficits in mice with a targeted glucocorticoid receptor gene disruption. Eur J Neurosci *9*, 2284-2296.

Oitzl, M.S., Reichardt, H.M., Joels, M., and de Kloet, E.R. (2001). Point mutation in the mouse glucocorticoid receptor preventing DNA binding impairs spatial memory. Proc Natl Acad Sci U S A *98*, 12790-12795.

Okuda, S., Roozendaal, B., and McGaugh, J.L. (2004). Glucocorticoid effects on object recognition memory require training-associated emotional arousal. Proc Natl Acad Sci U S A *101*, 853-858.

Olff, M., Langeland, W., and Gersons, B.P. (2005). The psychobiology of PTSD: coping with trauma. Psychoneuroendocrinology *30*, 974-982.

Olijslagers, J.E., de Kloet, E.R., Elgersma, Y., van Woerden, G.M., Joels, M., and Karst, H. (2008). Rapid changes in hippocampal CA1 pyramidal cell function via pre- as well as postsynaptic membrane mineralocorticoid receptors. Eur J Neurosci *27*, 2542-2550.

Osten, P., Srivastava, S., Inman, G.J., Vilim, F.S., Khatri, L., Lee, L.M., States, B.A., Einheber, S., Milner, T.A., Hanson, P.I.*, et al.* (1998). The AMPA receptor GluR2 C terminus can mediate a reversible, ATP-dependent interaction with NSF and alpha- and beta-SNAPs. Neuron *21*, 99-110.

Pacak, K., Palkovits, M., Kopin, I.J., and Goldstein, D.S. (1995). Stress-induced norepinephrine release in the hypothalamic paraventricular nucleus and pituitary-adrenocortical and sympathoadrenal activity: in vivo microdialysis studies. Front Neuroendocrinol *16*, 89-150.

Pakdel, R., and Rashidy-Pour, A. (2007). Microinjections of the dopamine D2 receptor antagonist sulpiride into the medial prefrontal cortex attenuate glucocorticoid-induced impairment of long-term memory retrieval in rats. Neurobiol Learn Mem *87*, 385-390.

Parsons, R.G., Gafford, G.M., and Helmstetter, F.J. (2006). Translational control via the mammalian target of rapamycin pathway is critical for the

formation and stability of long-term fear memory in amygdala neurons. J Neurosci *26*, 12977-12983.

Pascual-Le Tallec, L., and Lombes, M. (2005). The mineralocorticoid receptor: a journey exploring its diversity and specificity of action. Mol Endocrinol *19*, 2211-2221.

Pasricha, N., Joels, M., and Karst, H. (2011). Rapid effects of corticosterone in the mouse dentate gyrus via a nongenomic pathway. J Neuroendocrinol *23*, 143-147.

Passafaro, M., Nakagawa, T., Sala, C., and Sheng, M. (2003). Induction of dendritic spines by an extracellular domain of AMPA receptor subunit GluR2. Nature *424*, 677-681.

Passafaro, M., Piech, V., and Sheng, M. (2001). Subunit-specific temporal and spatial patterns of AMPA receptor exocytosis in hippocampal neurons. Nat Neurosci *4*, 917-926.

Pastalkova, E., Serrano, P., Pinkhasova, D., Wallace, E., Fenton, A.A., and Sacktor, T.C. (2006). Storage of spatial information by the maintenance mechanism of LTP. Science *313*, 1141-1144.

Pavlides, C., and McEwen, B.S. (1999). Effects of mineralocorticoid and glucocorticoid receptors on long-term potentiation in the CA3 hippocampal field. Brain Res *851*, 204-214.

Pavlides, C., Ogawa, S., Kimura, A., and McEwen, B.S. (1996). Role of adrenal steroid mineralocorticoid and glucocorticoid receptors in long-term potentiation in the CA1 field of hippocampal slices. Brain Res *738*, 229-235.

Pavlides, C., Watanabe, Y., Magarinos, A.M., and McEwen, B.S. (1995). Opposing roles of type I and type II adrenal steroid receptors in hippocampal long-term potentiation. Neuroscience *68*, 387-394.

Pedreira, M.E., and Maldonado, H. (2003). Protein synthesis subserves reconsolidation or extinction depending on reminder duration. Neuron *38*, 863-869.

Perez, J.L., Khatri, L., Chang, C., Srivastava, S., Osten, P., and Ziff, E.B.

(2001). PICK1 targets activated protein kinase Calpha to AMPA receptor clusters in spines of hippocampal neurons and reduces surface levels of the AMPA-type glutamate receptor subunit 2. J Neurosci *21*, 5417-5428.

Petrini, E.M., Lu, J., Cognet, L., Lounis, B., Ehlers, M.D., and Choquet, D. (2009). Endocytic trafficking and recycling maintain a pool of mobile surface AMPA receptors required for synaptic potentiation. Neuron *63*, 92-105.

Plant, K., Pelkey, K.A., Bortolotto, Z.A., Morita, D., Terashima, A., McBain, C.J., Collingridge, G.L., and Isaac, J.T. (2006). Transient incorporation of native GluR2-lacking AMPA receptors during hippocampal long-term potentiation. Nat Neurosci *9*, 602-604.

Pu, Z., Krugers, H.J., and Joels, M. (2007). Corticosterone time-dependently modulates beta-adrenergic effects on long-term potentiation in the hippocampal dentate gyrus. Learn Mem *14*, 359-367.

Pu, Z., Krugers, H.J., and Joels, M. (2009). Beta-adrenergic facilitation of synaptic plasticity in the rat basolateral amygdala in vitro is gradually reversed by corticosterone. Learn Mem *16*, 155-160.

Pugh, C.R., Fleshner, M., and Rudy, J.W. (1997a). Type II glucocorticoid receptor antagonists impair contextual but not auditory-cue fear conditioning in juvenile rats. Neurobiol Learn Mem *67*, 75-79.

Pugh, C.R., Tremblay, D., Fleshner, M., and Rudy, J.W. (1997b). A selective role for corticosterone in contextual-fear conditioning. Behav Neurosci *111*, 503-511.

Qin, Y., Zhu, Y., Baumgart, J.P., Stornetta, R.L., Seidenman, K., Mack, V., van Aelst, L., and Zhu, J.J. (2005). State-dependent Ras signaling and AMPA receptor trafficking. Genes Dev *19*, 2000-2015.

Quirarte, G.L., de la Teja, I.S., Casillas, M., Serafin, N., Prado-Alcala, R.A., and Roozendaal, B. (2009). Corticosterone infused into the dorsal striatum selectively enhances memory consolidation of cued water-maze training. Learn Mem *16*, 586-589.

Quirarte, G.L., Roozendaal, B., and McGaugh, J.L. (1997). Glucocorticoid

enhancement of memory storage involves noradrenergic activation in the basolateral amygdala. Proc Natl Acad Sci U S A *94*, 14048-14053.

Radulovic, J., Ruhmann, A., Liepold, T., and Spiess, J. (1999). Modulation of learning and anxiety by corticotropin-releasing factor (CRF) and stress: differential roles of CRF receptors 1 and 2. J Neurosci *19*, 5016-5025.

Rashidy-Pour, A., Vafaei, A.A., Taherian, A.A., Miladi-Gorji, H., Sadeghi, H., Fathollahi, Y., and Bandegi, A.R. (2009). Verapamil enhances acute stress or glucocorticoid-induced deficits in retrieval of long-term memory in rats. Behav Brain Res *203*, 76-80.

Reisel, D., Bannerman, D.M., Schmitt, W.B., Deacon, R.M., Flint, J., Borchardt, T., Seeburg, P.H., and Rawlins, J.N. (2002). Spatial memory dissociations in mice lacking GluR1. Nat Neurosci *5*, 868-873.

Reul, J.M., and de Kloet, E.R. (1985). Two receptor systems for corticosterone in rat brain: microdistribution and differential occupation. Endocrinology *117*, 2505-2511.

Rocca, D.L., Martin, S., Jenkins, E.L., and Hanley, J.G. (2008). Inhibition of Arp2/3-mediated actin polymerization by PICK1 regulates neuronal morphology and AMPA receptor endocytosis. Nat Cell Biol *10*, 259-271.

Roche, K.W., O'Brien, R.J., Mammen, A.L., Bernhardt, J., and Huganir, R.L. (1996). Characterization of multiple phosphorylation sites on the AMPA receptor GluR1 subunit. Neuron *16*, 1179-1188.

Rodrigues, S.M., LeDoux, J.E., and Sapolsky, R.M. (2009). The influence of stress hormones on fear circuitry. Annu Rev Neurosci *32*, 289-313.

Rodrigues, S.M., Schafe, G.E., and LeDoux, J.E. (2004). Molecular mechanisms underlying emotional learning and memory in the lateral amygdala. Neuron *44*, 75-91.

Rogan, M.T., Staubli, U.V., and LeDoux, J.E. (1997a). AMPA receptor facilitation accelerates fear learning without altering the level of conditioned fear acquired. J Neurosci *17*, 5928-5935.

Rogan, M.T., Staubli, U.V., and LeDoux, J.E. (1997b). Fear conditioning

induces associative long-term potentiation in the amygdala. Nature *390*, 604-607.

Romanski, L.M., Clugnet, M.C., Bordi, F., and LeDoux, J.E. (1993). Somatosensory and auditory convergence in the lateral nucleus of the amygdala. Behav Neurosci *107*, 444-450.

Roozendaal, B. (2000). 1999 Curt P. Richter award. Glucocorticoids and the regulation of memory consolidation. Psychoneuroendocrinology *25*, 213-238.

Roozendaal, B. (2002). Stress and memory: opposing effects of glucocorticoids on memory consolidation and memory retrieval. Neurobiol Learn Mem *78*, 578-595.

Roozendaal, B. (2003). Systems mediating acute glucocorticoid effects on memory consolidation and retrieval. Prog Neuropsychopharmacol Biol Psychiatry *27*, 1213-1223.

Roozendaal, B., Brunson, K.L., Holloway, B.L., McGaugh, J.L., and Baram, T.Z. (2002a). Involvement of stress-released corticotropin-releasing hormone in the basolateral amygdala in regulating memory consolidation. Proc Natl Acad Sci U S A *99*, 13908-13913.

Roozendaal, B., de Quervain, D.J., Ferry, B., Setlow, B., and McGaugh, J.L. (2001). Basolateral amygdala-nucleus accumbens interactions in mediating glucocorticoid enhancement of memory consolidation. J Neurosci *21*, 2518-2525.

Roozendaal, B., de Quervain, D.J., Schelling, G., and McGaugh, J.L. (2004a). A systemically administered beta-adrenoceptor antagonist blocks corticosterone-induced impairment of contextual memory retrieval in rats. Neurobiol Learn Mem *81*, 150-154.

Roozendaal, B., Griffith, Q.K., Buranday, J., De Quervain, D.J., and McGaugh, J.L. (2003). The hippocampus mediates glucocorticoid-induced impairment of spatial memory retrieval: dependence on the basolateral amygdala. Proc Natl Acad Sci U S A *100*, 1328-1333.

Roozendaal, B., Hahn, E.L., Nathan, S.V., de Quervain, D.J., and McGaugh, J.L. (2004b). Glucocorticoid effects on memory retrieval require concurrent noradrenergic activity in the hippocampus and basolateral amygdala. J Neurosci *24*, 8161-8169.

Roozendaal, B., Hernandez, A., Cabrera, S.M., Hagewoud, R., Malvaez, M., Stefanko, D.P., Haettig, J., and Wood, M.A. (2010). Membrane-associated glucocorticoid activity is necessary for modulation of long-term memory via chromatin modification. J Neurosci *30*, 5037-5046.

Roozendaal, B., Hui, G.K., Hui, I.R., Berlau, D.J., McGaugh, J.L., and Weinberger, N.M. (2006a). Basolateral amygdala noradrenergic activity mediates corticosterone-induced enhancement of auditory fear conditioning. Neurobiol Learn Mem *86*, 249-255.

Roozendaal, B., Koolhaas, J.M., and Bohus, B. (1993). Posttraining norepinephrine infusion into the central amygdala differentially enhances later retention in Roman high-avoidance and low-avoidance rats. Behav Neurosci *107*, 575-579.

Roozendaal, B., McEwen, B.S., and Chattarji, S. (2009a). Stress, memory and the amygdala. Nat Rev Neurosci.

Roozendaal, B., McEwen, B.S., and Chattarji, S. (2009b). Stress, memory and the amygdala. Nat Rev Neurosci *10*, 423-433.

Roozendaal, B., and McGaugh, J.L. (1996a). Amygdaloid nuclei lesions differentially affect glucocorticoid-induced memory enhancement in an inhibitory avoidance task. Neurobiol Learn Mem *65*, 1-8.

Roozendaal, B., and McGaugh, J.L. (1996b). The memory-modulatory effects of glucocorticoids depend on an intact stria terminalis. Brain Res *709*, 243-250.

Roozendaal, B., and McGaugh, J.L. (1997a). Basolateral amygdala lesions block the memory-enhancing effect of glucocorticoid administration in the dorsal hippocampus of rats. Eur J Neurosci *9*, 76-83.

Roozendaal, B., and McGaugh, J.L. (1997b). Glucocorticoid receptor

agonist and antagonist administration into the basolateral but not central amygdala modulates memory storage. Neurobiol Learn Mem *67*, 176-179.

Roozendaal, B., McReynolds, J.R., Van der Zee, E.A., Lee, S., McGaugh, J.L., and McIntyre, C.K. (2009c). Glucocorticoid effects on memory consolidation depend on functional interactions between the medial prefrontal cortex and basolateral amygdala. J Neurosci *29*, 14299-14308.

Roozendaal, B., Nguyen, B.T., Power, A.E., and McGaugh, J.L. (1999a). Basolateral amygdala noradrenergic influence enables enhancement of memory consolidation induced by hippocampal glucocorticoid receptor activation. Proc Natl Acad Sci U S A *96*, 11642-11647.

Roozendaal, B., Okuda, S., de Quervain, D.J., and McGaugh, J.L. (2006b). Glucocorticoids interact with emotion-induced noradrenergic activation in influencing different memory functions. Neuroscience *138*, 901-910.

Roozendaal, B., Okuda, S., Van der Zee, E.A., and McGaugh, J.L. (2006c). Glucocorticoid enhancement of memory requires arousal-induced noradrenergic activation in the basolateral amygdala. Proc Natl Acad Sci U S A *103*, 6741-6746.

Roozendaal, B., Portillo-Marquez, G., and McGaugh, J.L. (1996). Basolateral amygdala lesions block glucocorticoid-induced modulation of memory for spatial learning. Behav Neurosci *110*, 1074-1083.

Roozendaal, B., Quirarte, G.L., and McGaugh, J.L. (2002b). Glucocorticoids interact with the basolateral amygdala beta-adrenoceptor--cAMP/cAMP/PKA system in influencing memory consolidation. Eur J Neurosci *15*, 553-560.

Roozendaal, B., Schoorlemmer, G.H., Wiersma, A., Sluyter, S., Driscoll, P., Koolhaas, J.M., and Bohus, B. (1992). Opposite effects of central amygdaloid vasopressin and oxytocin on the regulation of conditioned stress responses in male rats. Ann N Y Acad Sci *652*, 460-461.

Roozendaal, B., Williams, C.L., and McGaugh, J.L. (1999b). Glucocorticoid receptor activation in the rat nucleus of the solitary tract facilitates memory

consolidation: involvement of the basolateral amygdala. Eur J Neurosci *11*, 1317-1323.

Rosenmund, C., Stern-Bach, Y., and Stevens, C.F. (1998). The tetrameric structure of a glutamate receptor channel. Science *280*, 1596-1599.

Rumpel, S., LeDoux, J., Zador, A., and Malinow, R. (2005). Postsynaptic receptor trafficking underlying a form of associative learning. Science *308*, 83-88.

Saglietti, L., Dequidt, C., Kamieniarz, K., Rousset, M.C., Valnegri, P., Thoumine, O., Beretta, F., Fagni, L., Choquet, D., Sala, C.*, et al.* (2007). Extracellular interactions between GluR2 and N-cadherin in spine regulation. Neuron *54*, 461-477.

Sah, P., Faber, E.S., Lopez De Armentia, M., and Power, J. (2003). The amygdaloid complex: anatomy and physiology. Physiol Rev *83*, 803-834.

Sajadi, A.A., Samaei, S.A., and Rashidy-Pour, A. (2006). Intra-hippocampal microinjections of anisomycin did not block glucocorticoid-induced impairment of memory retrieval in rats: an evidence for non-genomic effects of glucocorticoids. Behav Brain Res *173*, 158-162.

Sajadi, A.A., Samaei, S.A., and Rashidy-Pour, A. (2007). Blocking effects of intra-hippocampal naltrexone microinjections on glucocorticoid-induced impairment of spatial memory retrieval in rats. Neuropharmacology *52*, 347-354.

Sanders, M.J., Wiltgen, B.J., and Fanselow, M.S. (2003). The place of the hippocampus in fear conditioning. Eur J Pharmacol *463*, 217-223.

Sandi, C., Loscertales, M., and Guaza, C. (1997). Experience-dependent facilitating effect of corticosterone on spatial memory formation in the water maze. Eur J Neurosci *9*, 637-642.

Sandi, C., and Rose, S.P. (1994a). Corticosteroid receptor antagonists are amnestic for passive avoidance learning in day-old chicks. Eur J Neurosci *6*, 1292-1297.

Sandi, C., and Rose, S.P. (1994b). Corticosterone enhances long-term

retention in one-day-old chicks trained in a weak passive avoidance learning paradigm. Brain Res *647*, 106-112.

Sandi, C., and Rose, S.P. (1997). Protein synthesis- and fucosylation-dependent mechanisms in corticosterone facilitation of long-term memory in the chick. Behav Neurosci *111*, 1098-1104.

Sandin, B., and Chorot, P. (1989). The incubation theory of fear/anxiety: experimental investigation in a human laboratory model of Pavlovian conditioning. Behav Res Ther *27*, 9-18.

Sangha, S., Scheibenstock, A., and Lukowiak, K. (2003). Reconsolidation of a long-term memory in Lymnaea requires new protein and RNA synthesis and the soma of right pedal dorsal 1. J Neurosci *23*, 8034-8040.

Schafe, G.E., and LeDoux, J.E. (2000). Memory consolidation of auditory pavlovian fear conditioning requires protein synthesis and protein kinase A in the amygdala. J Neurosci *20*, RC96.

Schafe, G.E., Nadel, N.V., Sullivan, G.M., Harris, A., and LeDoux, J.E. (1999). Memory consolidation for contextual and auditory fear conditioning is dependent on protein synthesis, PKA, and MAP kinase. Learn Mem *6*, 97-110.

Schiller, D., Cain, C.K., Curley, N.G., Schwartz, J.S., Stern, S.A., Ledoux, J.E., and Phelps, E.A. (2008). Evidence for recovery of fear following immediate extinction in rats and humans. Learn Mem *15*, 394-402.

Schiller, D., Monfils, M.H., Raio, C.M., Johnson, D.C., Ledoux, J.E., and Phelps, E.A. (2010). Preventing the return of fear in humans using reconsolidation update mechanisms. Nature *463*, 49-53.

Schmidt, P., Holsboer, F., and Spengler, D. (2001). Beta(2)-adrenergic receptors potentiate glucocorticoid receptor transactivation via G protein beta gamma-subunits and the phosphoinositide 3-kinase pathway. Mol Endocrinol *15*, 553-564.

Schwabe, L., Oitzl, M.S., Philippsen, C., Richter, S., Bohringer, A., Wippich, W., and Schachinger, H. (2007). Stress modulates the use of spatial versus

stimulus-response learning strategies in humans. Learn Mem *14*, 109-116.

Schwabe, L., Schachinger, H., de Kloet, E.R., and Oitzl, M.S. (2010). Corticosteroids operate as a switch between memory systems. J Cogn Neurosci *22*, 1362-1372.

Scoville, W.B., and Milner, B. (1957). Loss of recent memory after bilateral hippocampal lesions. J Neurol Neurosurg Psychiatry *20*, 11-21.

Sehlmeyer, C., Schoning, S., Zwitserlood, P., Pfleiderer, B., Kircher, T., Arolt, V., and Konrad, C. (2009). Human fear conditioning and extinction in neuroimaging: a systematic review. PLoS One *4*, e5865.

Seidenbecher, T., Laxmi, T.R., Stork, O., and Pape, H.C. (2003). Amygdalar and hippocampal theta rhythm synchronization during fear memory retrieval. Science *301*, 846-850.

Sheng, M., and Kim, M.J. (2002). Postsynaptic signaling and plasticity mechanisms. Science *298*, 776-780.

Shi, S., Hayashi, Y., Esteban, J.A., and Malinow, R. (2001). Subunit-specific rules governing AMPA receptor trafficking to synapses in hippocampal pyramidal neurons. Cell *105*, 331-343.

Shi, S.H. (2001). Amersham Biosciences & Science Prize. AMPA receptor dynamics and synaptic plasticity. Science *294*, 1851-1852.

Shimshek, D.R., Jensen, V., Celikel, T., Geng, Y., Schupp, B., Bus, T., Mack, V., Marx, V., Hvalby, O., Seeburg, P.H.*, et al.* (2006). Forebrain-specific glutamate receptor B deletion impairs spatial memory but not hippocampal field long-term potentiation. J Neurosci *26*, 8428-8440.

Shors, T.J. (2006). Stressful experience and learning across the lifespan. Annu Rev Psychol *57*, 55-85.

Smith, S.M., and Vale, W.W. (2006). The role of the hypothalamic-pituitary-adrenal axis in neuroendocrine responses to stress. Dialogues Clin Neurosci *8*, 383-395.

Soeter, M., and Kindt, M. (2010). Dissociating response systems: erasing fear from memory. Neurobiol Learn Mem *94*, 30-41.

Song, I., Kamboj, S., Xia, J., Dong, H., Liao, D., and Huganir, R.L. (1998). Interaction of the N-ethylmaleimide-sensitive factor with AMPA receptors. Neuron *21*, 393-400.

Soravia, L.M., Heinrichs, M., Aerni, A., Maroni, C., Schelling, G., Ehlert, U., Roozendaal, B., and de Quervain, D.J. (2006). Glucocorticoids reduce phobic fear in humans. Proc Natl Acad Sci U S A *103*, 5585-5590.

Squire, L.R. (2004). Memory systems of the brain: a brief history and current perspective. Neurobiol Learn Mem *82*, 171-177.

Stein, V., House, D.R., Bredt, D.S., and Nicoll, R.A. (2003). Postsynaptic density-95 mimics and occludes hippocampal long-term potentiation and enhances long-term depression. J Neurosci *23*, 5503-5506.

Stone, E.A., McEwen, B.S., Herrera, A.S., and Carr, K.D. (1987). Regulation of alpha and beta components of noradrenergic cyclic AMP response in cortical slices. Eur J Pharmacol *141*, 347-356.

Suzuki, A., Josselyn, S.A., Frankland, P.W., Masushige, S., Silva, A.J., and Kida, S. (2004). Memory reconsolidation and extinction have distinct temporal and biochemical signatures. J Neurosci *24*, 4787-4795.

Takahashi, T., Svoboda, K., and Malinow, R. (2003). Experience strengthening transmission by driving AMPA receptors into synapses. Science *299*, 1585-1588.

Tanabe, Y., Masu, M., Ishii, T., Shigemoto, R., and Nakanishi, S. (1992). A family of metabotropic glutamate receptors. Neuron *8*, 169-179.

Tang, S.J., Reis, G., Kang, H., Gingras, A.C., Sonenberg, N., and Schuman, E.M. (2002). A rapamycin-sensitive signaling pathway contributes to long-term synaptic plasticity in the hippocampus. Proc Natl Acad Sci U S A *99*, 467-472.

Terashima, A., Cotton, L., Dev, K.K., Meyer, G., Zaman, S., Duprat, F., Henley, J.M., Collingridge, G.L., and Isaac, J.T. (2004). Regulation of synaptic strength and AMPA receptor subunit composition by PICK1. J Neurosci *24*, 5381-5390.

Terashima, A., Pelkey, K.A., Rah, J.C., Suh, Y.H., Roche, K.W., Collingridge, G.L., McBain, C.J., and Isaac, J.T. (2008). An essential role for PICK1 in NMDA receptor-dependent bidirectional synaptic plasticity. Neuron *57*, 872-882.

Tischmeyer, W., Schicknick, H., Kraus, M., Seidenbecher, C.I., Staak, S., Scheich, H., and Gundelfinger, E.D. (2003). Rapamycin-sensitive signalling in long-term consolidation of auditory cortex-dependent memory. Eur J Neurosci *18*, 942-950.

Trapp, T., Rupprecht, R., Castren, M., Reul, J.M., and Holsboer, F. (1994). Heterodimerization between mineralocorticoid and glucocorticoid receptor: a new principle of glucocorticoid action in the CNS. Neuron *13*, 1457-1462.

Tsigos, C., and Chrousos, G.P. (2002). Hypothalamic-pituitary-adrenal axis, neuroendocrine factors and stress. J Psychosom Res *53*, 865-871.

Tsokas, P., Ma, T., Iyengar, R., Landau, E.M., and Blitzer, R.D. (2007). Mitogen-activated protein kinase upregulates the dendritic translation machinery in long-term potentiation by controlling the mammalian target of rapamycin pathway. J Neurosci *27*, 5885-5894.

Tsvetkov, E., Carlezon, W.A., Benes, F.M., Kandel, E.R., and Bolshakov, V.Y. (2002). Fear conditioning occludes LTP-induced presynaptic enhancement of synaptic transmission in the cortical pathway to the lateral amygdala. Neuron *34*, 289-300.

Ulrich-Lai, Y.M., and Herman, J.P. (2009). Neural regulation of endocrine and autonomic stress responses. Nat Rev Neurosci *10*, 397-409.

Valentino, R.J., and Van Bockstaele, E. (2008). Convergent regulation of locus coeruleus activity as an adaptive response to stress. Eur J Pharmacol *583*, 194-203.

van Leeuwen, N., Bellingrath, S., de Kloet, E.R., Zitman, F.G., Derijk, R.H., Kudielka, B.M., and Wust, S. (2010). Human mineralocorticoid receptor (MR) gene haplotypes modulate MR expression and transactivation: Implication for the stress response. Psychoneuroendocrinology.

van Stegeren, A.H., Roozendaal, B., Kindt, M., Wolf, O.T., and Joels, M. (2010). Interacting noradrenergic and corticosteroid systems shift human brain activation patterns during encoding. Neurobiol Learn Mem *93*, 56-65.

van Strien, N.M., Cappaert, N.L., and Witter, M.P. (2009). The anatomy of memory: an interactive overview of the parahippocampal-hippocampal network. Nat Rev Neurosci *10*, 272-282.

Venero, C., and Sandi, C. (1997). Effects of NMDA and AMPA receptor antagonists on corticosterone facilitation of long-term memory in the chick. Eur J Neurosci *9*, 1923-1928.

Vreugdenhil, E., de Kloet, E.R., Schaaf, M., and Datson, N.A. (2001). Genetic dissection of corticosterone receptor function in the rat hippocampus. Eur Neuropsychopharmacol *11*, 423-430.

Wang, X.Y., Zhao, M., Ghitza, U.E., Li, Y.Q., and Lu, L. (2008a). Stress impairs reconsolidation of drug memory via glucocorticoid receptors in the basolateral amygdala. J Neurosci *28*, 5602-5610.

Wang, Y., Barbaro, M.F., and Baraban, S.C. (2006). A role for the mTOR pathway in surface expression of AMPA receptors. Neurosci Lett *401*, 35-39.

Wang, Z., Edwards, J.G., Riley, N., Provance, D.W., Jr., Karcher, R., Li, X.D., Davison, I.G., Ikebe, M., Mercer, J.A., Kauer, J.A.*, et al.* (2008b). Myosin Vb mobilizes recycling endosomes and AMPA receptors for postsynaptic plasticity. Cell *135*, 535-548.

Ward, E.S., Martinez, C., Vaccaro, C., Zhou, J., Tang, Q., and Ober, R.J. (2005). From sorting endosomes to exocytosis: association of Rab4 and Rab11 GTPases with the Fc receptor, FcRn, during recycling. Mol Biol Cell *16*, 2028-2038.

Wenthold, R.J., Petralia, R.S., Blahos, J., II, and Niedzielski, A.S. (1996). Evidence for multiple AMPA receptor complexes in hippocampal CA1/CA2 neurons. J Neurosci *16*, 1982-1989.

Wenthold, R.J., Prybylowski, K., Standley, S., Sans, N., and Petralia, R.S. (2003). Trafficking of NMDA receptors. Annu Rev Pharmacol Toxicol *43*,

335-358.
Whitlock, J.R., Heynen, A.J., Shuler, M.G., and Bear, M.F. (2006). Learning induces long-term potentiation in the hippocampus. Science *313*, 1093-1097.
Wiegert, O., Joels, M., and Krugers, H. (2006). Timing is essential for rapid effects of corticosterone on synaptic potentiation in the mouse hippocampus. Learn Mem *13*, 110-113.
Wiegert, O., Pu, Z., Shor, S., Joels, M., and Krugers, H. (2005). Glucocorticoid receptor activation selectively hampers N-methyl-D-aspartate receptor dependent hippocampal synaptic plasticity in vitro. Neuroscience *135*, 403-411.
Williams, C.L., and McGaugh, J.L. (1993). Reversible lesions of the nucleus of the solitary tract attenuate the memory-modulating effects of posttraining epinephrine. Behav Neurosci *107*, 955-962.
Williams, J.M., Guevremont, D., Mason-Parker, S.E., Luxmanan, C., Tate, W.P., and Abraham, W.C. (2007). Differential trafficking of AMPA and NMDA receptors during long-term potentiation in awake adult animals. J Neurosci *27*, 14171-14178.
Wisden, W., and Seeburg, P.H. (1993). Mammalian ionotropic glutamate receptors. Curr Opin Neurobiol *3*, 291-298.
Xia, J., Zhang, X., Staudinger, J., and Huganir, R.L. (1999). Clustering of AMPA receptors by the synaptic PDZ domain-containing protein PICK1. Neuron *22*, 179-187.
Xu, L., Anwyl, R., and Rowan, M.J. (1997). Behavioural stress facilitates the induction of long-term depression in the hippocampus. Nature *387*, 497-500.
Yang, Y.L., Chao, P.K., and Lu, K.T. (2006). Systemic and intra-amygdala administration of glucocorticoid agonist and antagonist modulate extinction of conditioned fear. Neuropsychopharmacology *31*, 912-924.
Yao, Y., Kelly, M.T., Sajikumar, S., Serrano, P., Tian, D., Bergold, P.J., Frey, J.U., and Sacktor, T.C. (2008). PKM zeta maintains late long-term

potentiation by N-ethylmaleimide-sensitive factor/GluR2-dependent trafficking of postsynaptic AMPA receptors. J Neurosci *28*, 7820-7827.

Yehuda, R. (2002). Post-traumatic stress disorder. N Engl J Med *346*, 108-114.

Yehuda, R. (2009). Status of glucocorticoid alterations in post-traumatic stress disorder. Ann N Y Acad Sci *1179*, 56-69.

Yudowski, G.A., Puthenveedu, M.A., Leonoudakis, D., Panicker, S., Thorn, K.S., Beattie, E.C., and von Zastrow, M. (2007). Real-time imaging of discrete exocytic events mediating surface delivery of AMPA receptors. J Neurosci *27*, 11112-11121.

Yuen, E.Y., Liu, W., Karatsoreos, I.N., Ren, Y., Feng, J., McEwen, B.S., and Yan, Z. (2011). Mechanisms for acute stress-induced enhancement of glutamatergic transmission and working memory. Mol Psychiatry *16*, 156-170.

Zhou, J., and Cidlowski, J.A. (2005). The human glucocorticoid receptor: one gene, multiple proteins and diverse responses. Steroids *70*, 407-417.

Zhou, M., Bakker, E.H., Velzing, E.H., Berger, S., Oitzl, M., Joels, M., and Krugers, H.J. (2010a). Both mineralocorticoid and glucocorticoid receptors regulate emotional memory in mice. Neurobiol Learn Mem.

Zhou, M., Bakker, E.H., Velzing, E.H., Berger, S., Oitzl, M., Joels, M., and Krugers, H.J. (2010b). Both mineralocorticoid and glucocorticoid receptors regulate emotional memory in mice. Neurobiol Learn Mem *94*, 530-537.

Zhou, M., Conboy, L., Sandi, C., Joels, M., and Krugers, H.J. (2009). Fear conditioning enhances spontaneous AMPA receptor-mediated synaptic transmission in mouse hippocampal CA1 area. Eur J Neurosci *30*, 1559-1564.

Zinebi, F., Russell, R.T., McKernan, M., and Shinnick-Gallagher, P. (2001). Comparison of paired-pulse facilitation of AMPA and NMDA synaptic currents in the lateral amygdala. Synapse *42*, 115-127.

Zola-Morgan, S., Squire, L.R., and Amaral, D.G. (1986). Human amnesia

and the medial temporal region: enduring memory impairment following a bilateral lesion limited to field CA1 of the hippocampus. J Neurosci *6*, 2950-2967.

Zola-Morgan, S., Squire, L.R., Amaral, D.G., and Suzuki, W.A. (1989). Lesions of perirhinal and parahippocampal cortex that spare the amygdala and hippocampal formation produce severe memory impairment. J Neurosci *9*, 4355-4370.