

References for Table III.

1. Fukata, Y. et al. Epilepsy-related ligand/receptor complex LGI1 and ADAM22 regulate synaptic transmission. *Science* 313, 1792-5 (2006).
2. Makino, C., Shibata, H., Ninomiya, H., Tashiro, N. & Fukumaki, Y. Identification of single-nucleotide polymorphisms in the human N-methyl-D-aspartate receptor subunit NR2D gene, GRIN2D, and association study with schizophrenia. *Psychiatr Genet* 15, 215-21 (2005).
3. Hakak, Y. et al. Genome-wide expression analysis reveals dysregulation of myelination-related genes in chronic schizophrenia. *Proc Natl Acad Sci U S A* 98, 4746-51 (2001).
4. Le-Niculescu, H. et al. Towards understanding the schizophrenia code: an expanded convergent functional genomics approach. *Am J Med Genet B Neuropsychiatr Genet* 144B, 129-58 (2007).
5. Delgado, I. J., Kim, D. S., Thatcher, K. N., LaSalle, J. M. & Van den Veyver, I. B. Expression profiling of clonal lymphocyte cell cultures from Rett syndrome patients. *BMC Med Genet* 7, 61 (2006).
6. Browne, D. L. et al. Identification of two new KCNA1 mutations in episodic ataxia/myokymia families. *Hum Mol Genet* 4, 1671-2 (1995).
7. Weber, P., Bartsch, U., Schachner, M. & Montag, D. Na,K-ATPase subunit beta1 knock-in prevents lethality of beta2 deficiency in mice. *J Neurosci* 18, 9192-203 (1998).
8. Lenzen, K. P. et al. Supportive evidence for an allelic association of the human KCNJ10 potassium channel gene with idiopathic generalized epilepsy. *Epilepsy Res* 63, 113-8 (2005).
9. Zhang, J. et al. Inhibition of the dopamine D1 receptor signaling by PSD-95. *J Biol Chem* 282, 15778-89 (2007).
10. Buono, R. J. et al. Association between variation in the human KCNJ10 potassium ion channel gene and seizure susceptibility. *Epilepsy Res* 58, 175-83 (2004).
11. Conti, L. et al. Niche-independent symmetrical self-renewal of a mammalian tissue stem cell. *PLoS Biol* 3, e283 (2005).
12. Konradi, C. et al. Molecular evidence for mitochondrial dysfunction in bipolar disorder. *Arch Gen Psychiatry* 61, 300-8 (2004).
13. Silberberg, G. et al. Stargazin involvement with bipolar disorder and response to lithium treatment. *Pharmacogenet Genomics* 18, 403-12 (2008).
14. Xing, G. et al. Decreased prefrontal CaMKII alpha mRNA in bipolar illness. *Neuroreport* 13, 501-5 (2002).
15. Kyosseva, S. V. Differential expression of mitogen-activated protein kinases and immediate early genes fos and jun in thalamus in schizophrenia. *Prog Neuropsychopharmacol Biol Psychiatry* 28, 997-1006 (2004).
16. Kyosseva, S. V. et al. Mitogen-activated protein kinases in schizophrenia. *Biol Psychiatry* 46, 689-96 (1999).
17. Novak, G., Seeman, P. & Tallerico, T. Increased expression of calcium/calmodulin-dependent protein kinase IIbeta in frontal cortex in schizophrenia and depression. *Synapse* 59, 61-8 (2006).
18. Dwivedi, Y. et al. Reduced activation and expression of ERK1/2 MAP kinase in the post-mortem brain of depressed suicide subjects. *J Neurochem* 77, 916-28 (2001).
19. Gulessarian, T., Kim, S. H., Fountoulakis, M. & Lubec, G. Aberrant expression of centractin and capping proteins, integral constituents of the dynactin complex, in fetal down syndrome brain. *Biochem Biophys Res Commun* 291, 62-7 (2002).
20. Jordanova, A. et al. Mutations in the neurofilament light chain gene (NEFL) cause early onset severe Charcot-Marie-Tooth disease. *Brain* 126, 590-7 (2003).
21. Holmes, S. E. et al. Disruption of the clathrin heavy chain-like gene (CLTCL) associated with features of DGS/VCFs: a balanced (21;22)(p12;q11) translocation. *Hum Mol Genet* 6, 357-67 (1997).
22. Carter, C. J. eIF2B and oligodendrocyte survival: where nature and nurture meet in bipolar disorder and schizophrenia? *Schizophr Bull* 33, 1343-53 (2007).
23. Clinton, S. M. & Meador-Woodruff, J. H. Abnormalities of the NMDA Receptor and Associated Intracellular Molecules in the Thalamus in Schizophrenia and Bipolar Disorder. *Neuropsychopharmacology* 29, 1353-62 (2004).

24. Toyooka, K. et al. Selective reduction of a PDZ protein, SAP-97, in the prefrontal cortex of patients with chronic schizophrenia. *J Neurochem* 83, 797-806 (2002).
25. Georgiou, D. M. et al. A novel NF-L mutation Pro22Ser is associated with CMT2 in a large Slovenian family. *Neurogenetics* 4, 93-6 (2002).
26. Miltenberger-Miltenyi, G. et al. Clinical and electrophysiological features in Charcot-Marie-Tooth disease with mutations in the NEFL gene. *Arch Neurol* 64, 966-70 (2007).
27. Cluskey, S. & Ramsden, D. B. Mechanisms of neurodegeneration in amyotrophic lateral sclerosis. *Mol Pathol* 54, 386-92 (2001).
28. Lee, I. et al. A single gene network accurately predicts phenotypic effects of gene perturbation in *Caenorhabditis elegans*. *Nat Genet* 40, 181-8 (2008).
29. Szatmari, P. et al. Mapping autism risk loci using genetic linkage and chromosomal rearrangements. *Nat Genet* 39, 319-28 (2007).
30. Mirlincs, K., Middleton, F. A., Marquez, A., Lewis, D. A. & Levitt, P. Molecular characterization of schizophrenia viewed by microarray analysis of gene expression in prefrontal cortex. *Neuron* 28, 53-67 (2000).
31. Tarpey, P. et al. Mutations in the DLG3 gene cause nonsyndromic X-linked mental retardation. *Am J Hum Genet* 75, 318-24 (2004).
32. Koene, S. et al. Major depression in adolescent children consecutively diagnosed with mitochondrial disorder. *J Affect Disord* (2008).
33. Dracheva, S. et al. N-methyl-D-aspartic acid receptor expression in the dorsolateral prefrontal cortex of elderly patients with schizophrenia. *Am J Psychiatry* 158, 1400-10 (2001).
34. Svaasand, E. K., Aasly, J., Landsem, V. M. & Klungland, H. Altered expression of PGK1 in a family with phosphoglycerate kinase deficiency. *Muscle Nerve* 36, 679-84 (2007).
35. Pickard, B. S. et al. Candidate psychiatric illness genes identified in patients with pericentric inversions of chromosome 18. *Psychiatr Genet* 15, 37-44 (2005).
36. Matigian, N. et al. Expression profiling in monozygotic twins discordant for bipolar disorder reveals dysregulation of the WNT signalling pathway. *Mol Psychiatry* 12, 815-25 (2007).
37. Pennington, K. et al. Prominent synaptic and metabolic abnormalities revealed by proteomic analysis of the dorsolateral prefrontal cortex in schizophrenia and bipolar disorder. *Mol Psychiatry* 13, 1102-17 (2008).
38. Kutsuwada, T. et al. Impairment of suckling response, trigeminal neuronal pattern formation, and hippocampal LTD in NMDA receptor epsilon 2 subunit mutant mice. *Neuron* 16, 333-44 (1996).
39. Yao, W. D. et al. Identification of PSD-95 as a regulator of dopamine-mediated synaptic and behavioral plasticity. *Neuron* 41, 625-38 (2004).
40. Sokolov, B. P. Oligodendroglial abnormalities in schizophrenia, mood disorders and substance abuse. Comorbidity, shared traits, or molecular phenocopies? *Int J Neuropsychopharmacol* 10, 547-55 (2007).
41. Vawter, M. P. et al. Microarray screening of lymphocyte gene expression differences in a multiplex schizophrenia pedigree. *Schizophr Res* 67, 41-52 (2004).
42. Jamain, S. et al. Mutations of the X-linked genes encoding neuroligins NLGN3 and NLGN4 are associated with autism. *Nat Genet* 34, 27-9 (2003).
43. Trotter, J. L., Hickey, W. F., van der Veen, R. C. & Sulze, L. Peripheral blood mononuclear cells from multiple sclerosis patients recognize myelin proteolipid protein and selected peptides. *J Neuroimmunol* 33, 55-62 (1991).
44. Klein, L., Klugmann, M., Nave, K. A., Tuohy, V. K. & Kyewski, B. Shaping of the autoreactive T-cell repertoire by a splice variant of self protein expressed in thymic epithelial cells. *Nat Med* 6, 56-61 (2000).
45. Chou, Y. K. et al. Frequency of T cells specific for myelin basic protein and myelin proteolipid protein in blood and cerebrospinal fluid in multiple sclerosis. *J Neuroimmunol* 38, 105-13 (1992).
46. O'Connor, J. A. & Hemby, S. E. Elevated GRIA1 mRNA expression in Layer II/III and V pyramidal cells of the DLPFC in schizophrenia. *Schizophr Res* 97, 277-88 (2007).
47. Magri, C. et al. Study on GRIA2, GRIA3 and GRIA4 genes highlights a positive association between schizophrenia and GRIA3 in female patients. *Am J Med Genet B Neuropsychiatr Genet* 147B, 745-53 (2008).

48. Eastwood, S. L. et al. Decreased expression of mRNAs encoding non-NMDA glutamate receptors GluR1 and GluR2 in medial temporal lobe neurons in schizophrenia. *Brain Res Mol Brain Res* 29, 211-23 (1995).
49. Komiyama, N. H. et al. SynGAP regulates ERK/MAPK signaling, synaptic plasticity, and learning in the complex with postsynaptic density 95 and NMDA receptor. *J Neurosci* 22, 9721-32 (2002).
50. Ibrahim, H. M. et al. Ionotropic glutamate receptor binding and subunit mRNA expression in thalamic nuclei in schizophrenia. *Am J Psychiatry* 157, 1811-23 (2000).
51. Whitham, R. H. et al. Lymphocytes from SJL/J mice immunized with spinal cord respond selectively to a peptide of proteolipid protein and transfer relapsing demyelinating experimental autoimmune encephalomyelitis. *J Immunol* 146, 101-7 (1991).
52. Bongarzone, E. R. et al. Identification of a new exon in the myelin proteolipid protein gene encoding novel protein isoforms that are restricted to the somata of oligodendrocytes and neurons. *J Neurosci* 19, 8349-57 (1999).
53. Bruno, R. et al. Multiple sclerosis candidate autoantigens except myelin oligodendrocyte glycoprotein are transcribed in human thymus. *Eur J Immunol* 32, 2737-47 (2002).
54. Jewtoukoff, V., Amzazi, S., Lebar, R., Bach, M. A. & Marche, P. N. T-cell receptor identification of an oligodendrocyte-specific autoreactive cytotoxic T-cell clone without self restriction. *Scand J Immunol* 36, 893-8 (1992).
55. Wakabayashi, K. et al. Phenotypic down-regulation of glutamate receptor subunit GluR1 in Alzheimer's disease. *Neurobiol Aging* 20, 287-95 (1999).
56. Pellegrini-Giampietro, D. E., Bennett, M. V. & Zukin, R. S. AMPA/kainate receptor gene expression in normal and Alzheimer's disease hippocampus. *Neuroscience* 61, 41-9 (1994).
57. Yasuda, R. P. et al. Reduction of AMPA-selective glutamate receptor subunits in the entorhinal cortex of patients with Alzheimer's disease pathology: a biochemical study. *Brain Res* 678, 161-7 (1995).
58. Aronica, E., Dickson, D. W., Kress, Y., Morrison, J. H. & Zukin, R. S. Non-plaque dystrophic dendrites in Alzheimer hippocampus: a new pathological structure revealed by glutamate receptor immunocytochemistry. *Neuroscience* 82, 979-91 (1998).
59. Eder, P., Reinprecht, I., Schreiner, E., Skofitsch, G. & Windisch, M. Increased density of glutamate receptor subunit 1 due to Cerebrolysin treatment: an immunohistochemical study on aged rats. *Histochem J* 33, 605-12 (2001).
60. Gorman, M. P. et al. Steroid-responsive neurologic relapses in a child with a proteolipid protein-1 mutation. *Neurology* 68, 1305-7 (2007).
61. Grigorenko, E. et al. Changes in glutamate receptor subunit composition in hippocampus and cortex in patients with refractory epilepsy. *J Neurol Sci* 153, 35-45 (1997).
62. Babb, T. L. et al. Glutamate AMPA receptors in the fascia dentata of human and kainate rat hippocampal epilepsy. *Epilepsy Res* 26, 193-205 (1996).
63. Gerber, D. J. et al. Evidence for association of schizophrenia with genetic variation in the 8p21.3 gene, PPP3CC, encoding the calcineurin gamma subunit. *Proc Natl Acad Sci U S A* 100, 8993-8 (2003).
64. Beveridge, N. J. et al. Dysregulation of miRNA 181b in the temporal cortex in schizophrenia. *Hum Mol Genet* 17, 1156-68 (2008).
65. Cumming, R. C., Dargusch, R., Fischer, W. H. & Schubert, D. Increase in expression levels and resistance to sulfhydryl oxidation of peroxiredoxin isoforms in amyloid beta-resistant nerve cells. *J Biol Chem* 282, 30523-34 (2007).
66. Ganor, Y. et al. Antibodies to glutamate receptor subtype 3 (GluR3) are found in some patients suffering from epilepsy as the main disease, but not in patients whose epilepsy accompanies antiphospholipid syndrome or Sneddon's syndrome. *Autoimmunity* 38, 417-24 (2005).
67. Watson, R. et al. Absence of antibodies to glutamate receptor type 3 (GluR3) in Rasmussen encephalitis. *Neurology* 63, 43-50 (2004).
68. Levite, M., Fleidervish, I. A., Schwarz, A., Pelley, D. & Futerman, A. H. Autoantibodies to the glutamate receptor kill neurons via activation of the receptor ion channel. *J Autoimmun* 13, 61-72 (1999).
69. Levite, M. & Hermelin, A. Autoimmunity to the glutamate receptor in mice--a model for Rasmussen's encephalitis? *J Autoimmun* 13, 73-82 (1999).

70. Moga, D. E. et al. Glutamate receptor subunit 3 (GluR3) immunoreactivity delineates a subpopulation of parvalbumin-containing interneurons in the rat hippocampus. *J Comp Neurol* 462, 15-28 (2003).
71. Rembach, A. et al. Antisense peptide nucleic acid targeting GluR3 delays disease onset and progression in the SOD1 G93A mouse model of familial ALS. *J Neurosci Res* 77, 573-82 (2004).
72. Fang, J., Nakamura, T., Cho, D. H., Gu, Z. & Lipton, S. A. S-nitrosylation of peroxiredoxin 2 promotes oxidative stress-induced neuronal cell death in Parkinson's disease. *Proc Natl Acad Sci U S A* 104, 18742-7 (2007).
73. Wu, Y. et al. Mutations in ionotropic AMPA receptor 3 alter channel properties and are associated with moderate cognitive impairment in humans. *Proc Natl Acad Sci U S A* 104, 18163-8 (2007).
74. Julien, J. P. Amyotrophic lateral sclerosis. unfolding the toxicity of the misfolded. *Cell* 104, 581-91 (2001).
75. Motzacker, M. M. et al. A defect in the ionotropic glutamate receptor 6 gene (GRIK2) is associated with autosomal recessive mental retardation. *Am J Hum Genet* 81, 792-8 (2007).
76. Kaukonen, J. et al. Role of adenine nucleotide translocator 1 in mtDNA maintenance. *Science* 289, 782-5 (2000).
77. Behan, A., Byrne, C., Dunn, M. J., Cagney, G. & Cotter, D. R. Proteomic analysis of membrane microdomain-associated proteins in the dorsolateral prefrontal cortex in schizophrenia and bipolar disorder reveals alterations in LAMP, STXBP1 and BASP1 protein expression. *Mol Psychiatry* (2008).
78. Bickel, S., Lipp, H. P. & Umbrecht, D. Impaired attentional modulation of auditory evoked potentials in N-methyl-D-aspartate NR1 hypomorphic mice. *Genes Brain Behav* 6, 558-68 (2007).
79. Potkin, S. G. et al. A genome-wide association study of schizophrenia using brain activation as a quantitative phenotype. *Schizophr Bull* 35, 96-108 (2009).
80. Mundo, E. et al. Evidence that the N-methyl-D-aspartate subunit 1 receptor gene (GRIN1) confers susceptibility to bipolar disorder. *Mol Psychiatry* 8, 241-5 (2003).
81. Begni, S. et al. Association between the G1001C polymorphism in the GRIN1 gene promoter region and schizophrenia. *Biol Psychiatry* 53, 617-9 (2003).
82. Suh, J. G., Ryoo, Z. W., Won, M. H., Oh, Y. S. & Kang, T. C. Differential alteration of NMDA receptor subunits in the gerbil dentate gyrus and subiculum following seizure. *Brain Res* 904, 104-11 (2001).
83. Smith, R. E., Haroutunian, V., Davis, K. L. & Meador-Woodruff, J. H. Expression of excitatory amino acid transporter transcripts in the thalamus of subjects with schizophrenia. *Am J Psychiatry* 158, 1393-9 (2001).
84. Arning, L. et al. NR2A and NR2B receptor gene variations modify age at onset in Huntington disease in a sex-specific manner. *Hum Genet* 122, 175-82 (2007).
85. Cardoso, C. et al. Refinement of a 400-kb critical region allows genotypic differentiation between isolated lissencephaly, Miller-Dieker syndrome, and other phenotypes secondary to deletions of 17p13.3. *Am J Hum Genet* 72, 918-30 (2003).
86. Martucci, L. et al. N-methyl-D-aspartate receptor NR2B subunit gene GRIN2B in schizophrenia and bipolar disorder: Polymorphisms and mRNA levels. *Schizophr Res* 84, 214-21 (2006).
87. Abdolmaleky, H. M., Thiagalingam, S. & Wilcox, M. Genetics and epigenetics in major psychiatric disorders: dilemmas, achievements, applications, and future scope. *Am J Pharmacogenomics* 5, 149-60 (2005).
88. Fallin, M. D. et al. Bipolar I disorder and schizophrenia: a 440-single-nucleotide polymorphism screen of 64 candidate genes among Ashkenazi Jewish case-parent trios. *Am J Hum Genet* 77, 918-36 (2005).
89. Knuesel, M. et al. Identification of novel protein-protein interactions using a versatile mammalian tandem affinity purification expression system. *Mol Cell Proteomics* 2, 1225-33 (2003).
90. Arzberger, T., Krampfl, K., Leimgruber, S. & Weindl, A. Changes of NMDA receptor subunit (NR1, NR2B) and glutamate transporter (GLT1) mRNA expression in Huntington's disease--an in situ hybridization study. *J Neuropathol Exp Neurol* 56, 440-54 (1997).