

SUPPLEMENTARY REFERENCES

1. Schizophrenia Working Group of the Psychiatric Genomics Consortium. Biological insights from 108 schizophrenia-associated genetic loci. *Nature*. 2014; 511:421–27.
<https://doi.org/10.1038/nature13595> PMID:[25056061](#)
2. Tobacco and Genetics Consortium. Genome-wide meta-analyses identify multiple loci associated with smoking behavior. *Nat Genet*. 2010; 42:441–47.
<https://doi.org/10.1038/ng.571> PMID:[20418890](#)
3. Lango Allen H, Estrada K, Lettre G, Berndt SI, Weedon MN, Rivadeneira F, Willer CJ, Jackson AU, Vedantam S, Raychaudhuri S, Ferreira T, Wood AR, Weyant RJ, et al. Hundreds of variants clustered in genomic loci and biological pathways affect human height. *Nature*. 2010; 467:832–38.
<https://doi.org/10.1038/nature09410> PMID:[20881960](#)
4. Landi MT, Chatterjee N, Yu K, Goldin LR, Goldstein AM, Rotunno M, Mirabello L, Jacobs K, Wheeler W, Yeager M, Bergen AW, Li Q, Consonni D, et al. A genome-wide association study of lung cancer identifies a region of chromosome 5p15 associated with risk for adenocarcinoma. *Am J Hum Genet*. 2009; 85:679–91.
<https://doi.org/10.1016/j.ajhg.2009.09.012>
PMID:[19836008](#)
5. Ma Y, Li MD. Establishment of a Strong Link Between Smoking and Cancer Pathogenesis through DNA Methylation Analysis. *Sci Rep*. 2017; 7:1811.
<https://doi.org/10.1038/s41598-017-01856-4>
PMID:[28500316](#)
6. Hannon E, Dempster E, Viana J, Burrage J, Smith AR, Macdonald R, St Clair D, Mustard C, Breen G, Therman S, Kaprio J, Toulopoulou T, Hulshoff Pol HE, et al. An integrated genetic-epigenetic analysis of schizophrenia: evidence for co-localization of genetic associations and differential DNA methylation. *Genome Biol*. 2016; 17:176.
<https://doi.org/10.1186/s13059-016-1041-x>
PMID:[27572077](#)
7. Jaffe AE, Gao Y, Deep-Soboslay A, Tao R, Hyde TM, Weinberger DR, Kleinman JE. Mapping DNA methylation across development, genotype and schizophrenia in the human frontal cortex. *Nat Neurosci*. 2016; 19:40–47.
<https://doi.org/10.1038/nn.4181> PMID:[26619358](#)
8. Horiuchi Y, Kondo MA, Okada K, Takayanagi Y, Tanaka T, Ho T, Varvaris M, Tajinda K, Hiyama H, Ni K, Colantuoni C, Schretlen D, Casella NG, et al. Molecular signatures associated with cognitive deficits in schizophrenia: a study of biopsied olfactory neural epithelium. *Transl Psychiatry*. 2016; 6:e915.
<https://doi.org/10.1038/tp.2016.154> PMID:[27727244](#)
9. Horiuchi Y, Kano S, Ishizuka K, Casella NG, Ishii S, Talbot CC Jr, Jaffe AE, Okano H, Pevsner J, Colantuoni C, Sawa A. Olfactory cells via nasal biopsy reflect the developing brain in gene expression profiles: utility and limitation of the surrogate tissues in research for brain disorders. *Neurosci Res*. 2013; 77:247–50.
<https://doi.org/10.1016/j.neures.2013.09.010>
PMID:[24120685](#)
10. Casella NG, Takaki M, Lin S, Sawa A. Neurodevelopmental involvement in schizophrenia: the olfactory epithelium as an alternative model for research. *J Neurochem*. 2007; 102:587–94.
<https://doi.org/10.1111/j.1471-4159.2007.04628.x>
PMID:[17488280](#)
11. Brennand KJ, Simone A, Jou J, Gelboin-Burkhart C, Tran N, Sangar S, Li Y, Mu Y, Chen G, Yu D, McCarthy S, Sebat J, Gage FH. Modelling schizophrenia using human induced pluripotent stem cells. *Nature*. 2011; 473:221–25.
<https://doi.org/10.1038/nature09915> PMID:[21490598](#)
12. Kondo MA, Tajinda K, Colantuoni C, Hiyama H, Seshadri S, Huang B, Pou S, Furukori K, Hookway C, Jaaro-Peled H, Kano SI, Matsuoka N, Harada K, et al. Unique pharmacological actions of atypical neuroleptic quetiapine: possible role in cell cycle/fate control. *Transl Psychiatry*. 2013; 3:e243.
<https://doi.org/10.1038/tp.2013.19> PMID:[23549417](#)
13. Kogel U, Schlage WK, Martin F, Xiang Y, Ansari S, Leroy P, Vanscheeuwijck P, Gebel S, Buettner A, Wyss C, Esposito M, Hoeng J, Peitsch MC. A 28-day rat inhalation study with an integrated molecular toxicology endpoint demonstrates reduced exposure effects for a prototypic modified risk tobacco product compared with conventional cigarettes. *Food Chem Toxicol*. 2014; 68:204–17.
<https://doi.org/10.1016/j.fct.2014.02.034>
PMID:[24632068](#)
14. Howell KR, Floyd K, Law AJ. PKB α /AKT3 loss-of-function causes learning and memory deficits and deregulation of AKT/mTORC2 signaling: relevance for schizophrenia. *PLoS One*. 2017; 12:e0175993.
<https://doi.org/10.1371/journal.pone.0175993>
PMID:[28467426](#)
15. Levenga J, Wong H, Milstead RA, Keller BN, LaPlante LE, Hoeffer CA. AKT isoforms have distinct hippocampal expression and roles in synaptic plasticity. *eLife*. 2017; 6:6.
<https://doi.org/10.7554/eLife.30640> PMID:[29173281](#)
16. Ripke S, O'Dushlaine C, Chamberlain K, Moran JL, Kähler AK, Akterin S, Bergen SE, Collins AL, Crowley JJ, Fromer M, Kim Y, Lee SH, Magnusson PK, et al, and Multicenter

- Genetic Studies of Schizophrenia Consortium, and Psychosis Endophenotypes International Consortium, and Wellcome Trust Case Control Consortium 2. Genome-wide association analysis identifies 13 new risk loci for schizophrenia. *Nat Genet.* 2013; 45:1150–59.
<https://doi.org/10.1038/ng.2742> PMID:[23974872](#)
17. Network and Pathway Analysis Subgroup of Psychiatric Genomics Consortium. Psychiatric genome-wide association study analyses implicate neuronal, immune and histone pathways. *Nat Neurosci.* 2015; 18:199–209.
<https://doi.org/10.1038/nn.3922> PMID:[25599223](#)
18. Sharp SI, Hu Y, Weymer JF, Rizig M, McQuillin A, Hunt SP, Gurling HM. The effect of clozapine on mRNA expression for genes encoding G protein-coupled receptors and the protein components of clathrin-mediated endocytosis. *Psychiatr Genet.* 2013; 23:153–62.
<https://doi.org/10.1097/YGP.0b013e32835fe51d>
PMID:[23811784](#)
19. Genis-Mendoza A, Gallegos-Silva I, Tovilla-Zarate CA, López-Narvaez L, González-Castro TB, Hernández-Díaz Y, López-Casamichana M, Nicolini H, Morales-Mulia S. Comparative Analysis of Gene Expression Profiles Involved in Calcium Signaling Pathways Using the NLVH Animal Model of Schizophrenia. *J Mol Neurosci.* 2018; 64:111–16.
<https://doi.org/10.1007/s12031-017-1013-y>
PMID:[29214423](#)
20. Guan F, Li L, Qiao C, Chen G, Yan T, Li T, Zhang T, Liu X. Evaluation of genetic susceptibility of common variants in CACNA1D with schizophrenia in Han Chinese. *Sci Rep.* 2015; 5:12935.
<https://doi.org/10.1038/srep12935>
PMID:[26255836](#)
21. Berger SM, Bartsch D. The role of L-type voltage-gated calcium channels Cav1.2 and Cav1.3 in normal and pathological brain function. *Cell Tissue Res.* 2014; 357:463–76.
<https://doi.org/10.1007/s00441-014-1936-3>
PMID:[24996399](#)
22. Gao R, Piguel NH, Melendez-Zaidi AE, Martin-de-Saavedra MD, Yoon S, Forrest MP, Myczek K, Zhang G, Russell TA, Csernansky JG, Surmeier DJ, Penzes P. CNTNAP2 stabilizes interneuron dendritic arbors through CASK. *Mol Psychiatry.* 2018; 23:1832–50.
<https://doi.org/10.1038/s41380-018-0027-3>
PMID:[29610457](#)
23. Poot M. Connecting the CNTNAP2 Networks with Neurodevelopmental Disorders. *Mol Syndromol.* 2015; 6:7–22.
<https://doi.org/10.1159/000371594> PMID:[25852443](#)
24. Ji W, Li T, Pan Y, Tao H, Ju K, Wen Z, Fu Y, An Z, Zhao Q, Wang T, He L, Feng G, Yi Q, Shi Y. CNTNAP2 is significantly associated with schizophrenia and major depression in the Han Chinese population. *Psychiatry Res.* 2013; 207:225–28.
<https://doi.org/10.1016/j.psychres.2012.09.024>
PMID:[23123147](#)
25. Jia P, Wang L, Fanous AH, Pato CN, Edwards TL, Zhao Z, and International Schizophrenia Consortium. Network-assisted investigation of combined causal signals from genome-wide association studies in schizophrenia. *PLOS Comput Biol.* 2012; 8:e1002587.
<https://doi.org/10.1371/journal.pcbi.1002587>
PMID:[22792057](#)
26. Solismäa A, Kampman O, Lyttikäinen LP, Seppälä N, Viikki M, Mononen N, Lehtimäki T, Leinonen E. Histaminergic gene polymorphisms associated with sedation in clozapine-treated patients. *Eur Neuropsychopharmacol.* 2017; 27:442–49.
<https://doi.org/10.1016/j.euroneuro.2017.03.009>
PMID:[28400155](#)
27. Tiwari AK, Zhang D, Pouget JG, Zai CC, Chowdhury NI, Brandl EJ, Qin L, Freeman N, Lieberman JA, Meltzer HY, Kennedy JL, Müller DJ. Impact of histamine receptors H1 and H3 polymorphisms on antipsychotic-induced weight gain. *World J Biol Psychiatry.* 2018; 19:S97–S105.
<https://doi.org/10.1080/15622975.2016.1262061>
PMID:[27855565](#)
28. Rannals MD, Hamersky GR, Page SC, Campbell MN, Briley A, Gallo RA, Phan BN, Hyde TM, Kleinman JE, Shin JH, Jaffe AE, Weinberger DR, Maher BJ. Psychiatric Risk Gene Transcription Factor 4 Regulates Intrinsic Excitability of Prefrontal Neurons via Repression of SCN10a and KCNQ1. *Neuron.* 2016; 90:43–55.
<https://doi.org/10.1016/j.neuron.2016.02.021>
PMID:[26971948](#)
29. Bruce HA, Kochunov P, Paciga SA, Hyde CL, Chen X, Xie Z, Zhang B, Xi HS, O'Donnell P, Whelan C, Schubert CR, Bellon A, Ament SA, et al. Potassium channel gene associations with joint processing speed and white matter impairments in schizophrenia. *Genes Brain Behav.* 2017; 16:515–21.
<https://doi.org/10.1111/gbb.12372> PMID:[28188958](#)
30. Chang S, Fang K, Zhang K, Wang J, and Network-Based Analysis of Schizophrenia Genome-Wide Association Data to Detect the Joint Functional Association Signals. Network-Based Analysis of Schizophrenia Genome-Wide Association Data to Detect the Joint Functional Association Signals. *PLoS One.* 2015; 10:e0133404.
<https://doi.org/10.1371/journal.pone.0133404>
PMID:[26193471](#)
31. Su L, Shen T, Huang G, Long J, Fan J, Ling W, Jiang J. Genetic association of GWAS-supported MAD1L1 gene

- polymorphism rs12666575 with schizophrenia susceptibility in a Chinese population. *Neurosci Lett.* 2016; 610:98–103.
<https://doi.org/10.1016/j.neulet.2015.10.061>
PMID:[26528791](#)
32. Candemir E, Kollert L, Weißflog L, Geis M, Müller A, Post AM, O’Leary A, Harro J, Reif A, Freudenberg F. Interaction of NOS1AP with the NOS-I PDZ domain: implications for schizophrenia-related alterations in dendritic morphology. *Eur Neuropsychopharmacol.* 2016; 26:741–55.
<https://doi.org/10.1016/j.euroneuro.2016.01.008>
PMID:[26861996](#)
33. Carrel D, Hernandez K, Kwon M, Mau C, Trivedi MP, Brzustowicz LM, Firestein BL. Nitric oxide synthase 1 adaptor protein, a protein implicated in schizophrenia, controls radial migration of cortical neurons. *Biol Psychiatry.* 2015; 77:969–78.
<https://doi.org/10.1016/j.biopsych.2014.10.016>
PMID:[25542305](#)
34. Hadzimichalis NM, Previtera ML, Moreau MP, Li B, Lee GH, Dulencin AM, Matteson PG, Buyske S, Millonig JH, Brzustowicz LM, Firestein BL. NOS1AP protein levels are altered in BA46 and cerebellum of patients with schizophrenia. *Schizophr Res.* 2010; 124:248–50.
<https://doi.org/10.1016/j.schres.2010.05.009>
PMID:[20605702](#)
35. Xu B, Wratten N, Charych EI, Buyske S, Firestein BL, Brzustowicz LM. Increased expression in dorsolateral prefrontal cortex of CAPON in schizophrenia and bipolar disorder. *PLoS Med.* 2005; 2:e263.
<https://doi.org/10.1371/journal.pmed.0020263>
PMID:[16146415](#)
36. Brzustowicz LM, Simone J, Mohseni P, Hayter JE, Hodgkinson KA, Chow EW, Bassett AS. Linkage disequilibrium mapping of schizophrenia susceptibility to the CAPON region of chromosome 1q22. *Am J Hum Genet.* 2004; 74:1057–63.
<https://doi.org/10.1086/420774> PMID:[15065015](#)
37. Rosa A, Fañanás L, Cuesta MJ, Peralta V, Sham P. 1q21-q22 locus is associated with susceptibility to the reality-distortion syndrome of schizophrenia spectrum disorders. *Am J Med Genet.* 2002; 114:516–18.
<https://doi.org/10.1002/ajmg.10526> PMID:[12116186](#)
38. Kremeyer B, García J, Kymäläinen H, Wratten N, Restrepo G, Palacio C, Miranda AL, López C, Restrepo M, Bedoya G, Brzustowicz LM, Ospina-Duque J, Arbeláez MP, Ruiz-Linares A. Evidence for a role of the NOS1AP (CAPON) gene in schizophrenia and its clinical dimensions: an association study in a South American population isolate. *Hum Hered.* 2009; 67:163–73.
<https://doi.org/10.1159/000181154> PMID:[19077434](#)
39. Wang HN, Liu GH, Zhang RG, Xue F, Wu D, Chen YC, Peng Y, Peng ZW, Tan QR. Quetiapine Ameliorates Schizophrenia-Like Behaviors and Protects Myelin Integrity in Cuprizone Intoxicated Mice: The Involvement of Notch Signaling Pathway. *Int J Neuropsychopharmacol.* 2015; 19:pyv088.
<https://doi.org/10.1093/ijnp/pyv088> PMID:[26232790](#)
40. Kim SK, Lee JY, Park HJ, Kim JW, Chung JH. Association study between polymorphisms of the PARD3 gene and schizophrenia. *Exp Ther Med.* 2012; 3:881–85.
<https://doi.org/10.3892/etm.2012.496>
PMID:[22969987](#)
41. Guipponi M, Santoni FA, Setola V, Gehrig C, Rotharmel M, Cuenca M, Guillen O, Dikeos D, Georgantopoulos G, Papadimitriou G, Curtis L, Méary A, Schürhoff F, et al. Exome sequencing in 53 sporadic cases of schizophrenia identifies 18 putative candidate genes. *PLoS One.* 2014; 9:e112745.
<https://doi.org/10.1371/journal.pone.0112745>
PMID:[25420024](#)
42. Goldsmith DR, Haroon E, Miller AH, Strauss GP, Buckley PF, Miller BJ. TNF- α and IL-6 are associated with the deficit syndrome and negative symptoms in patients with chronic schizophrenia. *Schizophr Res.* 2018; 199:281–84.
<https://doi.org/10.1016/j.schres.2018.02.048>
PMID:[29499967](#)
43. Mostaid MS, Pantelis C, Everall IP, Bousman CA. Decreased peripheral TNF alpha (TNF- α) mRNA expression in patients with treatment-resistant schizophrenia. *Schizophr Res.* 2018; 202:387–88.
<https://doi.org/10.1016/j.schres.2018.04.032>
PMID:[29706448](#)
44. Chen SY, Huang PH, Cheng HJ. Disrupted-in-Schizophrenia 1-mediated axon guidance involves TRIO-RAC-PAK small GTPase pathway signaling. *Proc Natl Acad Sci USA.* 2011; 108:5861–66.
<https://doi.org/10.1073/pnas.1018128108>
PMID:[21422296](#)