

The Complex Interaction Between Environment and Genes is Suicidal Behavior

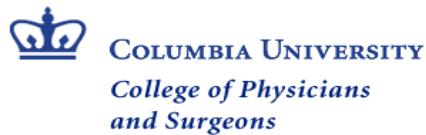
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A pilot genome wide association and gene expression array study of suicide with and without major depression

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Galfalvy, Zalsman, Huang et al., WJBP, 2014

Most markers connected to immune system

Table 3: Literature review for the 19 significant GWAS candidate genes in suicides (based on OMIM database*)

Gene Symbol	Chro. #	Description	Suggested clinical role*	Similar Genes found by others in expression studies
<i>CDH13</i>	16	cadherin 13, H-cadherin (heart)	Lung tumor recurrence?	CDH12, CDH22 (Thalmeier et al., 2008)
<i>NPR3</i>	5	natriuretic peptide receptor C	Maintenance of blood pressure	
<i>CD300LB</i>	17	CD300 antigen-like family member b	Cell surface localization in B and NK cells	
<i>FOXN3</i>	14	forkhead helix transcription	DNA damage correction?	ADAMTS1, IGF1, VIP, WDR39 (Thalmeier et al. 2008)
<i>DISC1</i>	1	disrupted in schizophrenia 1	Susceptibility for schizophrenia (Millar et al. 2000)	
<i>CYP19A1</i>	15	cytochrome P450, family 19, subfamily A, polypeptide 1	Aromatase deficiency	
<i>MYO3A</i>	10	myosin IIIA	Autosomal recessive deafness	MYR8 (Thalmeier et al. 2008)
<i>SFRS11</i>	1	arginine/serine-rich 11 splicing factors	Pre-mRNA splicing?	
<i>LSAMP</i>	3	limbic system-associated membrane protein	Neuronal surface glycoprotein in limbic system (Pimenta et al., 1996)	
<i>DSC2</i>	18	desmocollin 2	Ca dependent glycoprotein important for cell adhesion	
<i>SPTLC1</i>	9	serine palmitoyltransferase, long chain base subunit 1	Hereditary sensory neuropathy	
<i>ACCN1</i>	17	amiloride-sensitive cation channel 1, neuronal (degenerin)	neurodegeneration? KO-mice reduced sensitivity to mechanic sensation	
<i>FLJ23312</i>	5	Hypothetical protein	Not known	FLJ21616 (Sequeira et al. 2007)
<i>MBNL2</i>	13	muscleblind-like 2	May be associated with Myotonic Dystrophy	
<i>CD44</i>	11	CD44 molecule	Migration, cell fusion, tumorigenesis?	(Thalmeier et al.2008, Sequeira et al.2007)
<i>TUBGCP3</i>	13	tubulin, gamma complex associated protein 3	Associated with gama-tubulin in cells and oocytes	

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Genome-wide association study meta-analysis of suicide death and suicidal behavior

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N=3700, controls= 6500

Li et al., Mol Psychiatry 2023

Significant SNPs

mostly connected to **synaptogenesis**
(probably the SSRIs' real mechanism of action)

Table 3. Replication results for genome-wide significant loci identified in the ISGC and MVP meta-analysis.

CHR	SNP	BP	A1	A2	FRQ_A_4098	FRQ_U_247898	INFO	OR	SE	p	Nearest gene (distance to index SNP in kb)
1	rs3791129	44,480,093	A	G	0.7582	0.7503	0.99	1.06	0.03	0.041	SLC6A9 (0.0)
1	rs2503185	66,461,401	G	A	0.4231	0.4347	1	0.96	0.02	0.078	PDE4B (0.0)
11	rs7131627	113,299,829	A	G	0.4986	0.5107	1	0.96	0.02	0.075	DRD2 (0.0)
12	rs17485141	24,213,634	T	C	0.2325	0.248	1	0.92	0.03	0.003	SOX5 (0.0)
13	rs9525171	96,908,223	G	C	0.4996	0.5072	1	0.97	0.02	0.259	HS6ST3 (0.0)
14	rs850261	57,346,423	G	A	0.4344	0.4274	1	1.04	0.02	0.114	OTX2-AS1 (0.0)
15	rs17514846	91,416,550	A	C	0.3905	0.3936	1	0.99	0.02	0.59	FURIN (0.0)
22	rs2284000	37,053,338	G	C	0.2922	0.2902	0.99	1	0.03	0.853	CACNG2 (0.0)
3	rs7649709	173,129,819	A	C	0.3291	0.3269	0.96	1	0.02	0.965	NLGN1 (0.0)
6	rs62404522	19,307,114	C	T	0.1416	0.1301	1	1.12	0.03	0.001	LOC101928519 (-76.4)
6	rs35869525	26,946,687	T	C	0.04866	0.05079	1	0.98	0.05	0.642	MHC
7	rs62474683	115,020,725	G	A	0.4203	0.4283	1	0.97	0.02	0.172	LINC01392 (-149.3)

Li et al., Mol Psychiatry 2023



www.elsevier.com/locate/euroneuro



Genetic vulnerability, timing of short-term stress and mood regulation: A rodent diffusion tensor imaging study



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Zalsman et al., Eur Neuropsychopharmacology 2015

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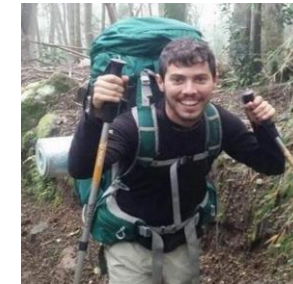
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