

Twenty-eight genes highlighted in grey are schizophrenia susceptibility genes common to at least one other pathology affecting hippocampal structure or function (See Table 1).

List of 173 schizophrenia susceptibility genes identified by (Sun, Jia et al. 2009)

Genes exhibiting differences in expression between newborn and adult monkeys in distinct hippocampal regions												
Adult > Newborn					Newborn > Adult							
EC	DG	CA3	CA1	Sub	EC	DG	CA3	CA1	Sub			
ADRA1A					CLINT1	CDC42SE2	AFAPI1L1	AR	C4B//C4B//C-BCAN			
AFAPI1L1					DPYSL2	CHGB	CRP	F12	CH3L1			
AH1					EGR3	CHRNB2	CSF2RB	GRID1	ERBB3			
AKT1					FGF1	CLINT1	EGR3	HTR4	FGF1			
APOE					GABRB2	CPLX2	F12	IL1B	GABRA1			
AR					GABRG2	DGCR2	FGF1	IL1RN	INHA			
ARHGEF11					INSIG2	DTNBP1	HP///HPR/ITK	MARCO	DBI			
ARNT					LARS	ENSA	IL1B	KY	PIP4K2A			
BCAN					MAP2	ERBB3	INHA	LOC732445 PRODH	F12			
BDNF					MED7	FGF1	KY	S100A1	GRAD1			
C3					NOS1	FOXP2	LPL	SHE	GRK3			
C4B//C4B//C4A//C4A					PAM	GABRB2	NES	SLC1A2	GRIN1			
CCKAR					PCM1	GABRG2	SLC1A1	TPH1	GRM3			
CDC42SE2					PIP4K2A	GRID1	SLC18A2	GRM3	GRIN2B			
CFB					RAPGEF6	IPOS	SYT11	TXNIP	GRM3			
CHAT					TSNAX	NOS1	NTNG1	IL1RN	DPYSL2			
CHGA					S100A1	KY	ZDHHC8	IL1RN	DPYSL2			
CHGB					SYN2	MED7	S100A1	IL1RN	GRD1			
CH3L1					TSNAX	NOS1	NTNG1	IL1RN	GRD1			
CHL1					TSNAX	NOS1	S100A1	IL1RN	GRD1			
CHRNA7					TSNAX	NOS1	NTNG1	IL1RN	GRD1			
CHRNB2					TSNAX	NOS1	S100A1	IL1RN	GRD1			
CLDN5					TSNAX	NOS1	NTNG1	IL1RN	GRD1			
CLINT1					TSNAX	NOS1	S100A1	IL1RN	GRD1			
CNR1					TSNAX	NOS1	NTNG1	IL1RN	GRD1			
COMT					TSNAX	NOS1	S100A1	IL1RN	GRD1			
CPLX2					TSNAX	NOS1	NTNG1	IL1RN	GRD1			
CPO					TSNAX	NOS1	S100A1	IL1RN	GRD1			
CRP					TSNAX	NOS1	NTNG1	IL1RN	GRD1			
CSF2RA					TSNAX	NOS1	S100A1	IL1RN	GRD1			
CSF2RB					TSNAX	NOS1	NTNG1	IL1RN	GRD1			
CYP1A2					TSNAX	NOS1	S100A1	IL1RN	GRD1			
DAO					TSNAX	NOS1	NTNG1	IL1RN	GRD1			
DAOA					TSNAX	NOS1	S100A1	IL1RN	GRD1			
DARC					TSNAX	NOS1	NTNG1	IL1RN	GRD1			
DBI					TSNAX	NOS1	S100A1	IL1RN	GRD1			
DDR1					TSNAX	NOS1	NTNG1	IL1RN	GRD1			
DES					TSNAX	NOS1	S100A1	IL1RN	GRD1			
DGCR2					TSNAX	NOS1	NTNG1	IL1RN	GRD1			
DISC1					TSNAX	NOS1	S100A1	IL1RN	GRD1			
DKK4					TSNAX	NOS1	NTNG1	IL1RN	GRD1			
DPYSL2					TSNAX	NOS1	S100A1	IL1RN	GRD1			
DRD1					TSNAX	NOS1	NTNG1	IL1RN	GRD1			
DRD2					TSNAX	NOS1	S100A1	IL1RN	GRD1			
DRD3					TSNAX	NOS1	NTNG1	IL1RN	GRD1			
DRD4					TSNAX	NOS1	S100A1	IL1RN	GRD1			
DRD5					TSNAX	NOS1	NTNG1	IL1RN	GRD1			
DTNBP1					TSNAX	NOS1	S100A1	IL1RN	GRD1			
EGF					TSNAX	NOS1	NTNG1	IL1RN	GRD1			
EGR3					TSNAX	NOS1	S100A1	IL1RN	GRD1			
ENSA					TSNAX	NOS1	NTNG1	IL1RN	GRD1			
ERBB3					TSNAX	NOS1	S100A1	IL1RN	GRD1			
ERBB4					TSNAX	NOS1	NTNG1	IL1RN	GRD1			
F12					TSNAX	NOS1	S100A1	IL1RN	GRD1			
FAM134A					TSNAX	NOS1	NTNG1	IL1RN	GRD1			
FAM189B//C1orf2					TSNAX	NOS1	S100A1	IL1RN	GRD1			
FAS					TSNAX	NOS1	NTNG1	IL1RN	GRD1			
FGF1					TSNAX	NOS1	S100A1	IL1RN	GRD1			
FN1					TSNAX	NOS1	NTNG1	IL1RN	GRD1			
FOXP2					TSNAX	NOS1	S100A1	IL1RN	GRD1			
FZD3					TSNAX	NOS1	NTNG1	IL1RN	GRD1			
GABBR1					TSNAX	NOS1	S100A1	IL1RN	GRD1			
GABRA1					TSNAX	NOS1	NTNG1	IL1RN	GRD1			
GABRA6					TSNAX	NOS1	S100A1	IL1RN	GRD1			
GABRB2					TSNAX	NOS1	NTNG1	IL1RN	GRD1			
GABRG2					TSNAX	NOS1	S100A1	IL1RN	GRD1			
GABRP					TSNAX	NOS1	NTNG1	IL1RN	GRD1			
GAD1					TSNAX	NOS1	S100A1	IL1RN	GRD1			
GC			19	23	16	10	15	27	33	54	67	27 Number of genes
GIA8			173	173	173	173	173	173	173	173	173	173 Susceptibility genes
GNB1L			10.98%	13.29%	9.25%	5.78%	8.67%	15.61%	19.08%	31.21%	38.73%	15.61% Percentage of total number of schizophrenia susceptibility genes
GRIA1												
GRID1												
GRIK3												
GRIN1												
GRIN2B												
GRM3												
GSR												
GSS												
GSTM1												
HP///HPR//HPR//HP												
HR												
HTR1A												
HTR2A												
HTR3A												
HTR4												
IL10												
IL12B												
IL1B												
IL1RN												
IL3												
IL8RA//CXCR1												
INHA												
INSIG2												
IPOS												
ITK												
KCNN3												
KMO												

n DG: genes significantly more expressed in newborn monkeys than at any other age

a DG: genes significantly less expressed in adult monkeys than at any other age

m DG: genes significantly more expressed in newborn and six-month-old than in one-year-old and adult monkeys

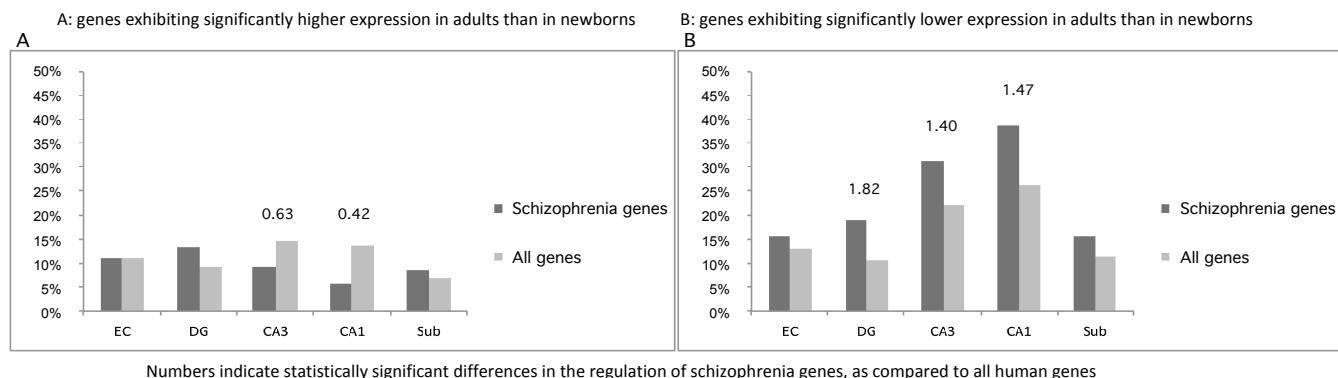
* CA3: genes significantly less expressed in adult monkeys than at any other age

+ CA1: genes significantly more expressed in newborn monkeys than at any other age

KY
LARS
LOC732445/// CHRNA7 ///CHRFAM7A//CHRFAM7A ///CHRNA7
LPL
LZTS1
MAGI1
MAGI2
MALL
MAOA
MAP2
MARCO
MED12
MED7
MLC1
MMDA
MTHFR
NES
NOS1
NOS1AP
NOTCH2
NOTCH4
NPAS3
NPHP1
NPY
NR4A2
NRG1
NRGN
NTF3
NTNG1
NUMBL
OLIG2
PAM
PCM1
PDE4B
PDLM5
PICK1
PIP4K2A
PLA2G4A
PLA2G6
PLXNA2
PPP2R2B
PPP3CC
PROC
PRODH
PTPRZ1
RAPGEF6
RELN
RGS4
S100A1
S100A10
SCG2
SELENBP1
SHE
SLC18A1
SLC18A2
SLC1A2
SLC6A3
SLC6A4
SLIT3
SOX10
STX1A
SYN2
SYT11
TBX1
TH
TNF
TP53
TPH1
TSNAX
TTL
TXNIP
UHMK1
XBP1
YWHAH
ZDHHC8

Supplementary information 2: Developmental regulation of expression of schizophrenia susceptibility genes in the primate hippocampal formation. Favre et al.

Percentages of schizophrenia susceptibility genes exhibiting differences in expression between newborn and adult monkeys in any one of five distinct hippocampal regions
 Comparison with all genes exhibiting differences in expression between newborn and adult monkeys in any one of five distinct hippocampal regions



Schizophrenia susceptibility genes (n=173)

	EC	DG	CA3	CA1	Sub		EC	DG	CA3	CA1	Sub
up-regulated genes	19	23	16	10	15		27	33	54	67	27
all pathological genes	173	173	173	173	173		173	173	173	173	173
	10.98%	13.29%	9.25%	5.78%	8.67%		15.61%	19.08%	31.21%	38.73%	15.61%

All genes (n=20,741)

	EC	DG	CA3	CA1	Sub		EC	DG	CA3	CA1	Sub
up-regulated genes	2294	1942	3059	2843	1439		2722	2177	4632	5474	2353
all genes	20741	20741	20741	20741	20741		20741	20741	20741	20741	20741
	11.06%	9.36%	14.75%	13.71%	6.94%		13.12%	10.50%	22.33%	26.39%	11.34%

Ratio (Percentage schizophrenia genes / percentage all genes)

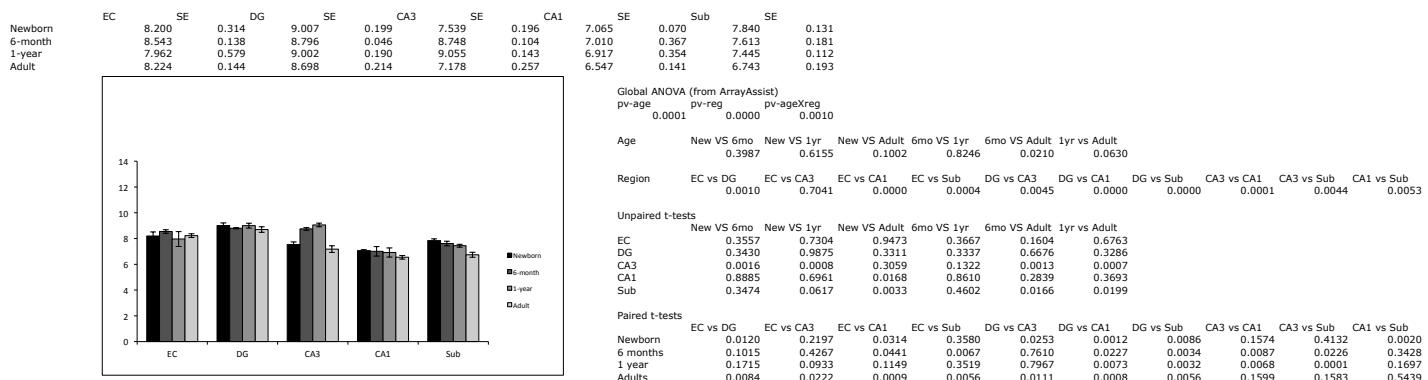
0.99	1.42	0.63	0.42	1.25	1.19	1.82	1.40	1.47	1.38
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Statistical comparisons

Overall	Chi square	15.21158 > 14.860	Overall	Chi square	2.8828664 < 9.488
		4 Degrees of freedom			4 Degrees of freedom
		p<0.005			NS
EC	Chi square	0.0010492 < 3.841 (p=0.05)	EC	Chi square	0.9266513 < 3.841 (p=0.05)
		1 Degrees of freedom			1 Degrees of freedom
		NS			NS
DG	Chi square	3.1154794 < 3.841 (p=0.05)	DG	Chi square	13.361711 > 10.828 (p=0.001)
		1 Degrees of freedom			1 Degrees of freedom
		NS			p<0.001
CA3	Chi square	4.1383226 > 3.841 (p=0.05)	CA3	Chi square	7.7839169 > 6.635 (p=0.01)
		1 Degrees of freedom			1 Degrees of freedom
		p<0.05			p<0.01
CA1	Chi square	9.1509355 > 7.879 (p=0.005)	CA1	Chi square	13.406816 > 10.828 (p=0.001)
		1 Degrees of freedom			1 Degrees of freedom
		p<0.005			p<0.001
Sub	Chi square	0.7961371 < 3.841 (p=0.05)	Sub	Chi square	3.0906228 < 3.841 (p=0.05)
		1 Degrees of freedom			1 Degrees of freedom
		NS			NS

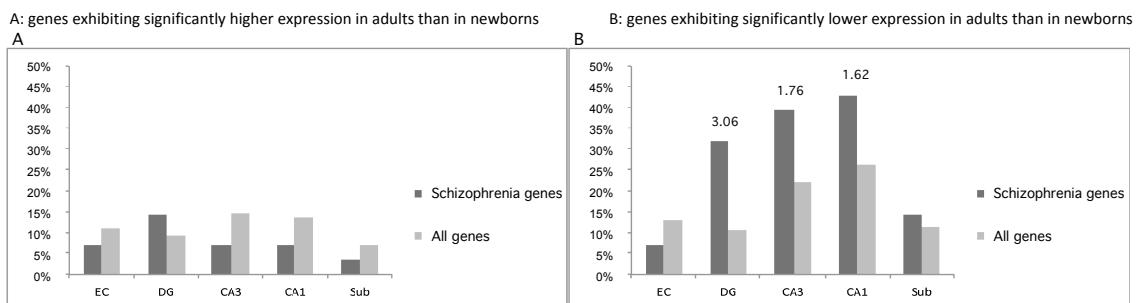
206382_s_at Hs.502182 GO:0007399|CBDNF//brain-rBDNF 11//chr11 627 6.7058077 6.1236234 6.669372 6.688084 7.71818 7.301085 6.3943505 6.252702 6.4502673 7.3403597 6.3590555

BDNF - 206382_s_at



Supplementary information 4: Developmental regulation of expression of schizophrenia susceptibility genes also involved in other diseases affecting the hippocampal formation. Favre et al.

Percentages of schizophrenia susceptibility genes exhibiting differences in expression between newborn and adult monkeys in any one of five distinct hippocampal regions
 Comparison with all genes exhibiting differences in expression between newborn and adult monkeys in any one of five distinct hippocampal regions



Numbers indicate statistically significant differences in the regulation of schizophrenia genes, as compared to all human genes

Schizophrenia susceptibility genes also involved in other diseases (n=28)

	EC	DG	CA3	CA1	Sub		EC	DG	CA3	CA1	Sub	
up-regulat	2	4	2	2	1		down-regu	2	9	11	12	4
all patholo	28	28	28	28	28		all patholo	28	28	28	28	28

All genes (n=20,741)

	EC	DG	CA3	CA1	Sub		EC	DG	CA3	CA1	Sub	
up-regulat	2294	1942	3059	2843	1439		down-regu	2722	2177	4632	5474	2353
all genes	20741	20741	20741	20741	20741		all genes	20741	20741	20741	20741	20741

Ratio (Percentage schizophrenia / percentage all genes)

0.65 1.53 0.48 0.52 0.51 0.54 3.06 1.76 1.62 1.26

Statistical comparisons

Overall	Chi square 3.089027 < 9.488	Overall	Chi square 6.704084 < 9.488
	4 Degrees of freedom		4 Degrees of freedom
	NS		NS
EC	Chi square 0.436397 < 3.841 (p=0.05)	EC	Chi square 0.926651 < 3.841 (p=0.05)
	1 Degrees of freedom		1 Degrees of freedom
	NS		NS
DG	Chi square 0.797928 < 3.841 (p=0.05)	DG	Chi square 13.91305 > 10.828 (p=0.001)
	1 Degrees of freedom		1 Degrees of freedom
	NS		p<0.001
CA3	Chi square 1.287211 < 3.841 (p=0.05)	CA3	Chi square 4.629969 > 3.841 (p=0.05)
	1 Degrees of freedom		1 Degrees of freedom
	NS		p<0.05
CA1	Chi square 1.019206 < 3.841 (p=0.05)	CA1	Chi square 3.899967 > 3.841 (p=0.05)
	1 Degrees of freedom		1 Degrees of freedom
	NS		p<0.05
Sub	Chi square 0.491127 < 3.841 (p=0.05)	Sub	Chi square 0.240405 < 3.841 (p=0.05)
	1 Degrees of freedom		1 Degrees of freedom
	NS		NS