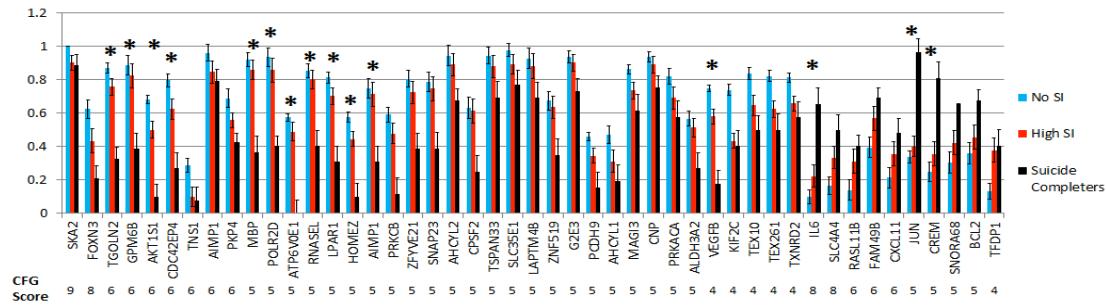


Supplementary Information:

Figure S1 Biomarkers Validation in Suicide Completers (A) Validating of top AP candidate biomarkers for suicidality. 47 out of the 153 with top-scoring CFG (31%) showed stepwise significant change between no SI, high SI, and validation suicide completers. 17 (11%) remained significant after strict Bonferroni correction. (B) Validating of top DE candidate biomarkers for suicidality. 124 out of the 418 with top-scoring CFG (30%) showed stepwise significant change between no SI, high SI, and validation suicide completers. 68 (16%) remained significant after strict Bonferroni correction.

A. Validation of top AP Biomarkers



CFG Score	Probeset	Gene	Direction of Change	P-Value (One-Way ANOVA)
5	225408_at	MBP	D	6.736E-10
5	214144_at	POLR2D	D	1.022E-09
8	205207_at	IL6	I	1.436E-08
5	201466_s_at	JUN	I	2.214E-08
6	203834_s_at	TGOLN2	D	1.098E-07
6	236116_at	GPM6B	D	2.319E-07
6	224982_at	AKT1S1	D	3.539E-07
5	230527_at	ATP6VOE1	D	3.801E-07
4	203683_s_at	VEGFB	D	5.126E-07
5	241740_at	CREM	I	0.00000108
6	218062_x_at	CDC42EP4	D	0.000001155
5	221287_at	RNASEL	D	0.000000605
5	204036_at	LPAR1	D	0.000007672
5	231868_at	HOMEZ	D	0.00008269
5	227605_at	AIMP1	D	0.00008374
5	230437_s_at	PRKCB	D	0.0001339
5	219929_s_at	ZFYVE21	D	0.0001693
5	209131_s_at	SNAP23	D	0.0003915
8	205021_s_at	FOXN3	D	0.0004985
4	211519_s_at	KIF2C	D	0.0005629
5	212814_at	AHCYL2	D	0.001033
5	233208_x_at	CPSF2	D	0.001708
8	210739_x_at	SLC44A	I	0.002351
4	242538_at	TFDP1	I	0.002375
4	1558702_at	TEX10	D	0.002806
5	225775_at	TSPAN33	D	0.00302
4	1559675_at	TEX261	D	0.00427
5	222263_at	SLC35E1	D	0.006511
5	1566403_at	SNORA6B	I	0.008132
5	1554679_a_at	LAPTM4B	D	0.01125
5	1568873_at	ZNF519	D	0.01164
6	218863_s_at	TNS1	D	0.01233
6	219142_at	RASL11B	I	0.01238
6	217535_at	FAM49B	I	0.01877
6	207004_at	BCL2	I	0.01997
5	223254_s_at	G2E3	D	0.02143
5	238919_at	PCDH9	D	0.0215
5	207464_at	AHCYL1	D	0.02317
9	225686_at	SKA2	D	0.02744
5	226770_at	MAGI3	D	0.02924
6	210163_at	CXCL11	I	0.02934
6	235594_at	AIMP1	D	0.03006
5	1557943_at	CNP	D	0.03149
5	202801_at	PRKACA	D	0.03237
5	210544_s_at	ALDH3A2	D	0.03479
4	210803_at	TXNRD2	D	0.04251
6	201927_s_at	PKP4	D	0.04861

B. Validation of top DE Biomarkers

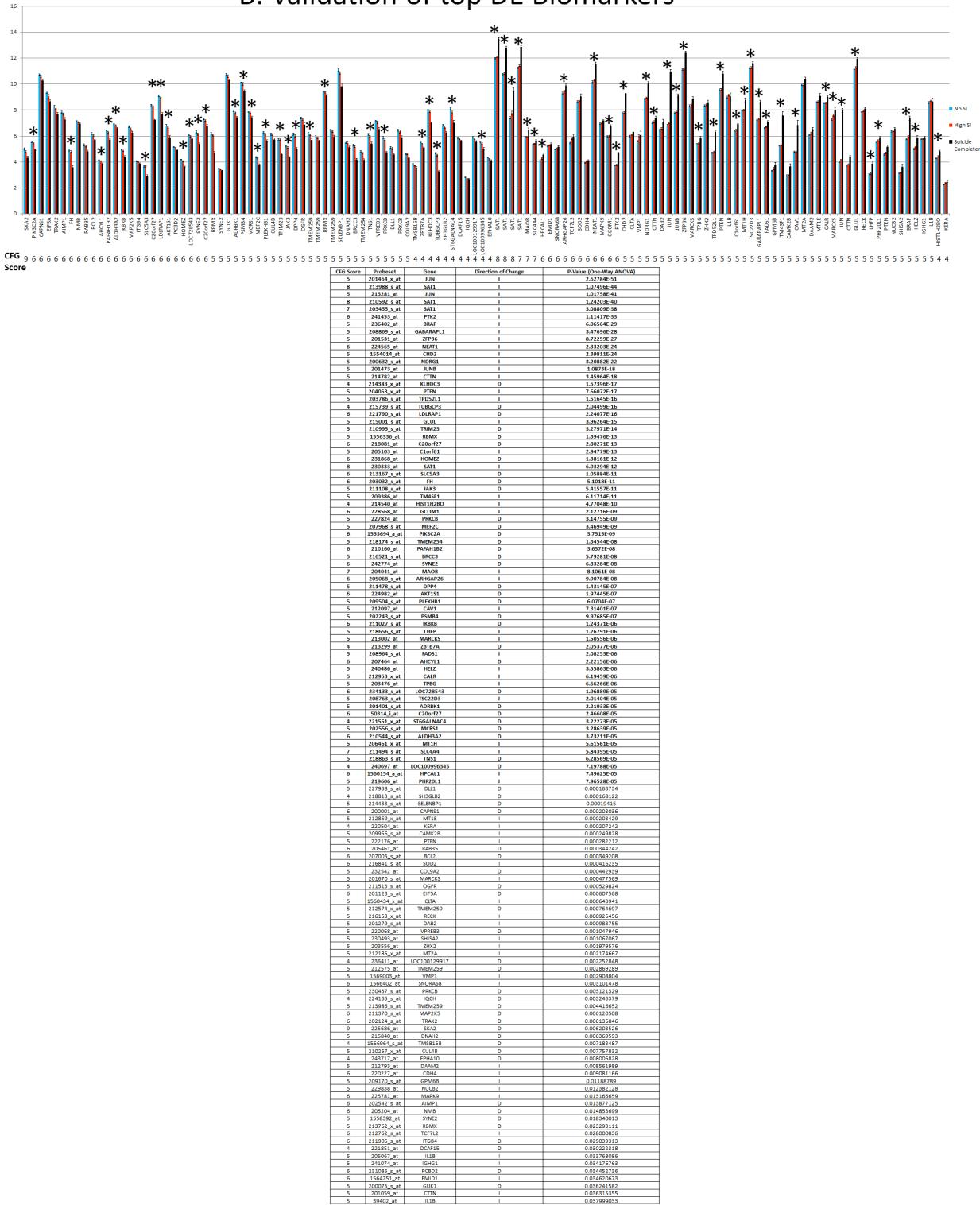
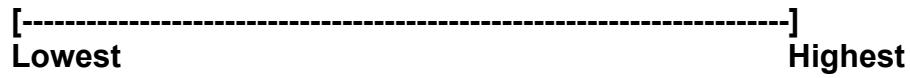


Figure S2. SASS and snapshot of apps screen display.**Simplified Affective State Scale (SASS)**

For each item, mark the scale with a vertical line where you think you are at this moment in time, compared to lowest and highest you ever remember being:

Mood Subscale**1) Mood**

How good is your mood right now?

**2) Motivation to do things**

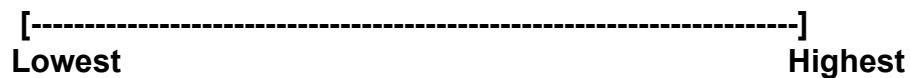
How is your motivation, your drive, your determination to do things right now?

**3) Movement activity**

How high is your physical energy and the amount of moving about that you feel like doing right now?

**4) Thinking activity**

How high is your mental energy and thinking activity going on in your mind right now?



5) Self-esteem

How good do you feel about yourself and your accomplishments right now?



6) Interest in pleasurable activities

How high is your interest to do things that are fun and enjoyable right now?



7) Appetite

How high is your appetite and desire for food right now?



Anxiety Subscale

1) Anxiety

How anxious are you right now?



2) Uncertainty

How uncertain about things do you feel right now?



3) Fear

How frightened about things do you feel right now?



4) Anger

How angry about things do you feel right now?



Comments (optional):

Describe events or actions that you think are influencing how you feel now. Describe any additional feelings you might have at this moment in time:

SASS App

 **SASS**

Simplified Affective State Scale

Lab Version

Current Subject ID: 001

Mood and Anxiety

 **Enter Ratings**

 **View Ratings**

 **Send Ratings**

 **Export Ratings**

 **Set Subject ID**

 SASS - Enter Ratings

Simplified Affective State Scale

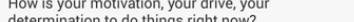
Subject ID: 001

Mood Subscale

For each item, slide the scale to where you think you are at this moment in time, compared to lowest and highest you ever remember being:

1) Mood: 16/100
How good is your mood right now?

Lowest Highest

2) Motivation to do things: 20/100
How is your motivation, your drive, your determination to do things right now?

Lowest Highest

3) Movement activity: 41/100
How high is your physical energy and the amount of moving about that you feel like doing right now?

Lowest Highest

4) Thinking activity: upset

 SASS - Enter Ratings

Anxiety Subscale

For each item, slide the scale to where you think you are at this moment in time, compared to lowest and highest you ever remember being:

1) Anxiety: 82/100
How anxious are you right now?

Lowest Highest

2) Uncertainty: 66/100
How uncertain about things do you feel right now?

Lowest Highest

3) Fear: 80/100
How frightened about things do you feel right now?

Lowest Highest

4) Anger: 37/100
How angry about things do you feel right now?

Lowest Highest

CFI-S App

50° 71% 12:10 PM 50° 71% 12:11 PM 50° 70% 12:13 PM

CFI-S Suicide Risk Assessment

CFI-S Suicide risk assessment
22 items

Current Subject ID: 001
Last CFI-S Assessment: 11:47 AM, 04/20/2015

Ask and answer the following questions. If you don't understand a question, you can tap the question text for more info.

Item 1.

Do you have a mood disorder?	Yes	No	Not sure
------------------------------	-----	----	----------

Comments (optional):

If so, has it been diagnosed and treated?

Yes	No	Not sure
-----	----	----------

Comments:

Do you have any other kind of psychiatric diagnosis?

Yes	No	Not sure
-----	----	----------

Comments:



CFI-S Score = 0.64
(64% of possible points)

Figure S3. mTOR signaling. The top KEGG pathway in our 76 Bonferroni corrected validated markers for suicide. Boxed in black are our suicide biomarkers present in this pathway.

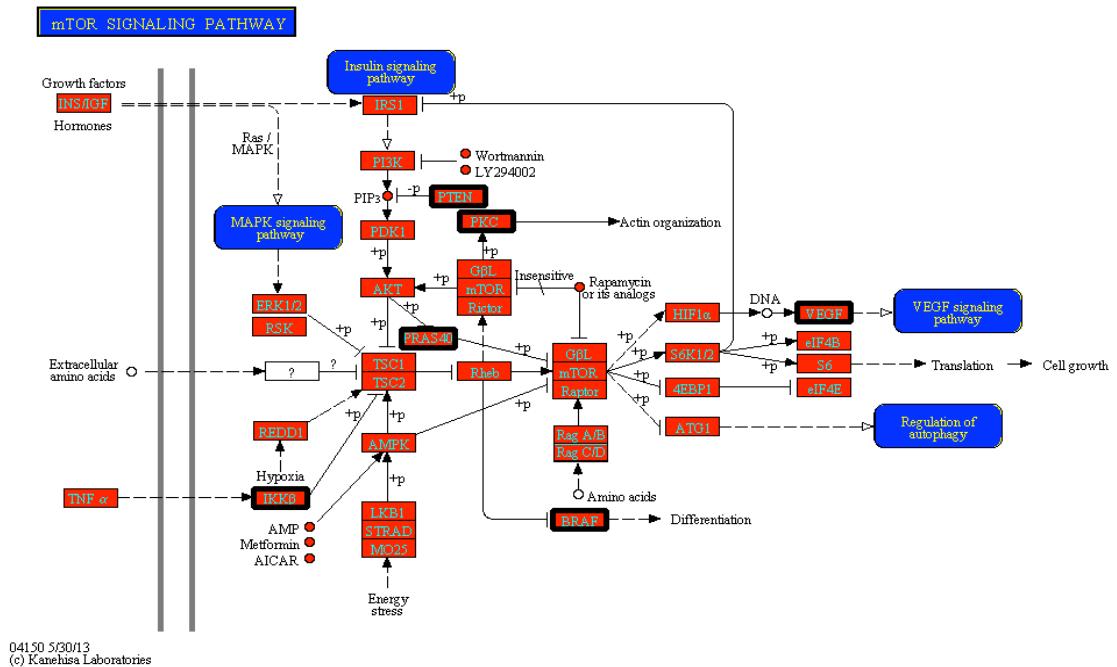


Figure S4. Reproducibility and diagnosis differences in levels of biomarkers.

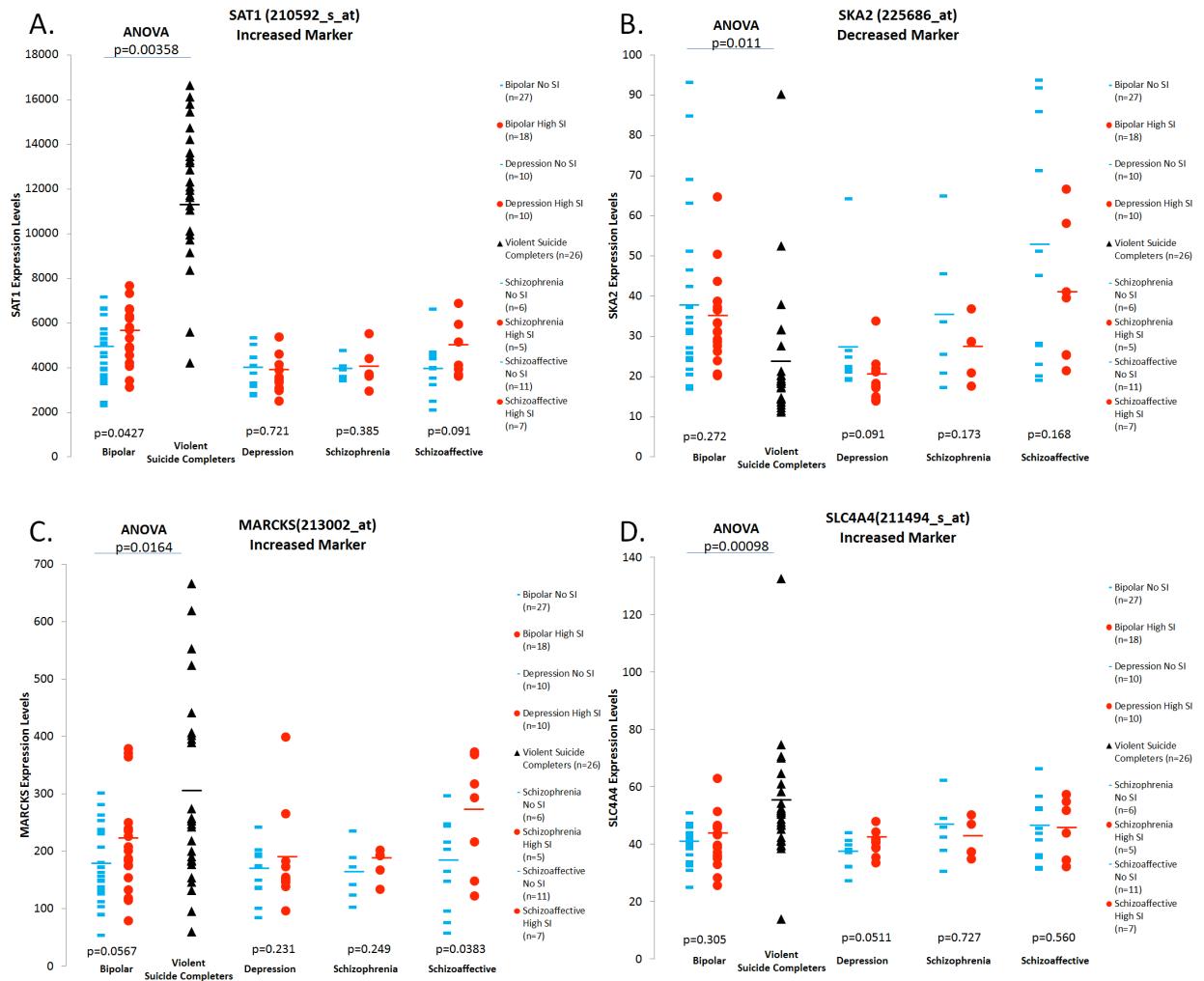


Table S1. Detailed Demographics

Cohort 1: Discovery Cohort (n=37) (106 visits)					
Subject ID visit	Diagnosis	Age	Gender	Ethnicity	HAMD SI
phchp016v1	SZ	54	M	African American	2
phchp016v2	SZ	54	M	African American	0
phchp016v3	SZ	54	M	African American	0
phchp023v1	BP	52	M	Caucasian	0
phchp023v2	BP	52	M	Caucasian	3
phchp023v3	BP	52	M	Caucasian	0
phchp042v1	SZA	43	M	Caucasian	3
phchp042v2	SZA	43	M	Caucasian	0
phchp042v3	SZA	44	M	Caucasian	0
phchp047v1	SZA	57	M	African American	2
phchp047v2	SZA	57	M	African American	0
phchp047v3	SZA	58	M	African American	0
phchp072v1	SZA	60	M	Caucasian	0
phchp072v2	SZA	60	M	Caucasian	0
phchp072v3	SZA	60	M	Caucasian	2
phchp088v2	BP	45	M	Caucasian	0
phchp088v3	BP	45	M	Caucasian	0
phchp088v4	BP	49	M	Caucasian	3
phchp088v5	BP	50	M	Caucasian	4
phchp089v1	SZA	33	M	Caucasian	0
phchp089v2	SZA	33	M	Caucasian	0
phchp089v4	SZA	38	M	Caucasian	3
phchp093v1	BP	51	M	Caucasian	0
phchp093v2	BP	51	M	Caucasian	0
phchp093v3	BP	52	M	Caucasian	3
phchp095v1	BP	28	M	Caucasian	3
phchp095v2	BP	29	M	Caucasian	0
phchp095v3	BP	29	M	Caucasian	2
phchp109v1	BP	22	M	Caucasian	0
phchp109v2	BP	25	M	Caucasian	3
phchp122v1	BP	51	M	Caucasian	0
phchp122v2	BP	51	M	Caucasian	2
phchp128v1	BP	45	M	Caucasian	2
phchp128v2	BP	45	M	Caucasian	0
phchp136v1	BP	41	M	Caucasian	0
phchp136v2	BP	41	M	Caucasian	0

phchp136v3	BP	41	M	Caucasian	3
phchp140v2	BP	38	M	Caucasian	3
phchp140v3	BP	38	M	Caucasian	2
phchp140v4	BP	40	M	Caucasian	0
phchp142v1	BP	55	M	Caucasian	0
phchp142v2	BP	55	M	Caucasian	0
phchp142v3	BP	55	M	Caucasian	0
phchp142v4	BP	57	M	Caucasian	2
phchp142v5	BP	57	M	Caucasian	0
phchp142v6	BP	58	M	Caucasian	0
phchp150v1	SZA	61	M	Caucasian	2
phchp150v2	SZA	61	M	Caucasian	0
phchp150v3	SZA	62	M	Caucasian	0
phchp153v1	BP	55	M	Caucasian	0
phchp153v2	BP	55	M	Caucasian	2
phchp153v3	BP	56	M	Caucasian	0
phchp153v4	BP	57	M	Caucasian	0
phchp153v6	BP	58	M	Caucasian	0
phchp155v1	MDD	37	M	Caucasian	3
phchp155v2	MDD	37	M	Caucasian	0
phchp161v1	MDD	54	M	African American	3
phchp161v2	MDD	54	M	African American	0
phchp161v3	MDD	54	M	African American	0
phchp179v1	BP	36	M	Caucasian	0
phchp179v2	BP	37	M	Caucasian	0
phchp179v4	BP	37	M	Caucasian	3
phchp182v1	MDD	39	M	Caucasian	2
phchp182v2	MDD	39	M	Caucasian	0
phchp182v3	MDD	40	M	Caucasian	3
phchp183v1	BP	48	M	Caucasian	3
phchp183v2	BP	48	M	Caucasian	0
phchp194v1	MDD	47	M	Caucasian	2
phchp194v2	MDD	47	M	Caucasian	0
phchp194v3	MDD	47	M	Caucasian	0
phchp198v1	MDD	61	M	Caucasian	4
phchp198v2	MDD	61	M	Caucasian	0
phchp198v4	MDD	62	M	Caucasian	0
phchp236v1	MDD	51	M	Caucasian	0
phchp236v2	MDD	51	M	Caucasian	3
phchp243v1	PTSD	50	M	African American	3
phchp243v2	PTSD	50	M	African American	0
phchp243v3	PTSD	52	M	African American	0
phchp248v1	SZ	52	M	African American	0

phchp248v2	SZ	52	M	African American	3
phchp248v3	SZ	53	M	African American	2
phchp266v1	MoodNOS	41	M	Caucasian	3
phchp266v2	MoodNOS	42	M	Caucasian	0
phchp266v3	MoodNOS	42	M	Caucasian	0
phchp277v1	SZ	49	M	Caucasian	0
phchp277v2	SZ	50	M	Caucasian	3
phchp277v3	SZ	50	M	Caucasian	0
phchp293v1	BP	43	M	Caucasian	0
phchp293v2	BP	44	M	Caucasian	2
phchp296v1	BP	48	M	Caucasian	0
phchp296v2	BP	49	M	Caucasian	2
phchp300v1	SZA	47	M	Caucasian	2
phchp300v2	SZA	47	M	Caucasian	0
phchp300v3	SZA	48	M	Caucasian	2
phchp304v1	MDD	52	M	Caucasian	2
phchp304v2	MDD	52	M	Caucasian	0
phchp304v3	MDD	52	M	Caucasian	2
phchp308v1	SZ	47	M	African American	3
phchp308v2	SZ	47	M	African American	0
phchp310v1	Mood NOS	54	M	African American	2
phchp310v2	Mood NOS	54	M	African American	0
phchp310v3	Mood NOS	54	M	African American	2
phchp319v1	PTSD	42	M	African American	0
phchp319v2	MDD	42	M	African American	4
phchp325v1	PTSD	44	M	Caucasian	3
phchp325v2	PTSD	44	M	Caucasian	0

Cohort 2: Coroner's Office Validation Cohort -gene expression data (n=26) and CFI-S data (n=35)

SubjectID-Visit	Dx	Age	Gender	Ethnicity	Method	CFI-S Score	Gene Expression
INBRAIN09	Bipolar/Schizophrenia	59	M	Caucasian	Hanging	0.5	Y
INBRAIN011	Depression/ADHD	26	M	Caucasian	GSW to chest	0.55	Y
INBRAIN012	Unknown	39	M	Caucasian	GSW - Head	0.5	Y
INBRAIN013	Depression	68	M	African American	GSW - Head	0.4	Y
INBRAIN014	None	27	M	Caucasian	Hanging	0.2	Y
INBRAIN015	None	40	M	Caucasian	Hanging	0.272	Y
INBRAIN016	Anxiety/TBI	68	M	Caucasian	GSW- head	0.684	Y
INBRAIN017	Depression	56	M	Caucasian	GSW to chest	0.7	Y
INBRAIN018	None	65	M	Caucasian	deep cut to wrist	0.786	Y

INBRAIN019	Depression	55	M	Caucasian	GSW to head & chest	0.45	Y
INBRAIN021		23	M	African American	Hanging	0.375	Y
INBRAIN022	Bipolar depression	38	M	Hispanic	GSW - Head	0.55	Y
INBRAIN023		18	M	Caucasian	Hanging	0.35	Y
INBRAIN024		23	M	Caucasian	Hanging	0.45	Y
INBRAIN025		31	M	African American	GSW - Head	0.4	Y
INBRAIN028	Alcoholism	67	M	Caucasian	GSW to chest	0.5	Y
INBRAIN030		22	M	African American	GSW- head	0.55	Y
INBRAIN033	Depression	26	M	Caucasian	GSW to chest	0.4	Y
INBRAIN035	Depression	58	M	Caucasian	Electrocution	0.5	Y
INBRAIN036		59	M	Caucasian	GSW to chest	0.444	Y
INBRAIN039		53	M	Caucasian	Hanging	0.6	Y
INBRAIN040		36	M	Caucasian	GSW- head	0.5	Y
INBRAIN044		23	M	Caucasian	Hanging	0.7	Y
INBRAIN048	Psychosis	26	M	Caucasian	GSW- head	0.762	Y
INBRAIN055	Depression	18	M	Caucasian	GSW - Head		Y
INBRAIN056	Depression	37	M	Caucasian	Hanging		Y
INBRAIN07	Depression/anxiety	57	M	Caucasian	CO Poisoning	0.615	N
INBRAIN08	Bipolar, untreated	31	M	Caucasian	Drug overdose	0.556	N
INBRAIN031		56	M	Caucasian	Drug overdose	0.563	N
INBRAIN037	Depression	24	M	Asian	Jump	0.368	N
INBRAIN041	Depression	76	M	Caucasian	GSW - Head	0.75	N
INBRAIN042		25	M	Caucasian	GSW - Head	0.545	N
INBRAIN043	None	28	M	Caucasian	GSW - Head	0.65	N
INBRAIN045		20	M	Caucasian	GSW - Head	0.6	N
INBRAIN046	Depression	65	M	Caucasian	GSW - Chest	0.667	N
INBRAIN047	Depression	57	M	Caucasian	GSW - Head	0.5	N
INBRAIN049	Depression, untreated	41	M	Caucasian	GSW - Head	0.55	N

Coroner's Office Validation Cohort -Toxicology

Subject ID	Toxicology
INBRAIN09	NA
INBRAIN011	ALPRAZOLAM 3.2 NG/ML TRAMADOL 331 NG/ML NORTRAMADOL 179 NG/ML BUPROPION 136 NG/ML CITALOPRAM/ESCITALOPRAM 229 NG/ML CAFFEINE COTININE
INBRAIN012	NEGATIVE
INBRAIN013	CAFFEINE
INBRAIN014	ETHANOL 0.15 % (W/V) CAFFEINE
INBRAIN015	ETHANOL 0.119 % (W/V) CAFFEINE
INBRAIN016	DIAZEPAM 155 NORDIAZEPAM 61.9 ALPRAZOLAM 6.8 ATENOLOL WARFARIN CAFFEINE
INBRAIN017	CLONAZEPAM 6.6 7-AMINOCLONAZEPAM 73.7 Glucose positive urine THC 2.0 THC-COOH 10.5 ETHANOL 0.130 FLUOXETINE 636 NORFLUOXETINE 359 VENLAFAXINE 1641 NORVENLAFAXINE 136 CAFFEINE
INBRAIN018	ETHANOL 0.057 %(W/V) AMIODARONE CAFFEINE COTININE

INBRAIN019	ALPRAZOLAM 169 CAFFEINE
INBRAIN021	THC 8.9 THC 60.2 ISOPROPANOL 0.042
INBRAIN022	ETHANOL 0.185 CAFFEINE
INBRAIN023	CAFFEINE POSITIVE
INBRAIN024	CAFFEINE POSITIVE
INBRAIN025	THC 1.2 THC-COOH 12.0 CAFFEINE
INBRAIN028	ETHANOL 0.354 ANTIHISTAMINES DIPHENHYRAMINE 178 AMLODIPINE 19.9 CAFFEINE
INBRAIN030	CAFFEINE POSITIVE
INBRAIN033	ETHANOL 0.128 CITALOPRAM 294 CAFFEINE
INBRAIN035	VENLAFAXINE 231 NORVENLAFAXINE 452 AMLODIPINE 45.3 CAFFEINE
INBRAIN036	NEGATIVE
INBRAIN039	ETHANOL 0.158 CAFFEINE
INBRAIN040	IBUPROFEN 8.2 CAFFEINE
INBRAIN044	THC 10.3 THC-COOH 143
INBRAIN048	CARBOXY THC 78 ng/ml CAFFEINE
INBRAIN055	THC-COOH 4.3 ng/ml CARBOXY THC 69 ng/ml
INBRAIN056	NEGATIVE

Cohort 3: Test Cohort for Suicidal Ideation (n=108) (223 visits)

Subject ID visit	Diagnosis	Age	Gender	Ethnicity	SI
phchp003v1	SZ	50	M	African American	0
phchp005v1	SZA	45	M	Caucasian	0
phchp005v2	SZA	45	M	Caucasian	0
phchp005v3	SZA	45	M	Caucasian	0
phchp006v1	SZA	52	M	African American	0
phchp006v2	SZA	52	M	African American	0
phchp008v1	SZ	47	M	African American	0
phchp010v1	SZA	45	M	Caucasian	0
phchp010v2	SZA	45	M	Caucasian	0
phchp010v3	SZA	45	M	Caucasian	0
phchp013v1	SZA	53	M	African American	0
phchp013v3	SZA	54	M	African American	0
phchp015v1	SZ	48	M	African American	0
phchp015v2	SZ	49	M	African American	0
phchp017v2	SZA	53	M	African American	0
phchp017v3	SZA	54	M	African American	0
phchp019v1	SZ	50	M	African American	0
phchp019v2	SZ	51	M	African American	0
phchp019v3	SZ	51	M	African American	0
phchp021v1	SZA	48	M	Hispanic	0
phchp021v2	SZA	49	M	Hispanic	0
phchp021v3	SZA	49	M	Hispanic	0
phchp022v1	SZ	48	M	Caucasian	0
phchp022v2	SZ	48	M	Caucasian	0
phchp024v1	SZA	49	M	African American	0
phchp025v1	SZ	42	M	Caucasian	0
phchp026v1	SZA	49	M	African American	1
phchp026v2	SZA	49	M	African American	0
phchp026v3	SZA	49	M	African American	0
phchp027v1	SZA	40	M	Caucasian	0
phchp029v1	MDD	56	M	Caucasian	3
phchp030v1	BP	49	M	Caucasian	0
phchp030v3	BP	49	M	Caucasian	0
phchp031v1	BP	51	M	Caucasian	0
phchp031v2	BP	51	M	Caucasian	0
phchp031v3	BP	52	M	Caucasian	0

phchp033v1	SZA	48	M	Caucasian	3
phchp039v1	BP	52	M	Caucasian	0
phchp039v3	BP	52	M	Caucasian	0
phchp040v1	SZA	50	M	Caucasian	0
phchp040v2	SZA	50	M	Caucasian	0
phchp040v3	SZA	50	M	Caucasian	0
phchp045v1	BP	36	M	Caucasian	1
phchp045v3	BP	36	M	Caucasian	0
phchp046v1	SZA	45	M	Caucasian	0
phchp046v2	SZA	45	M	Caucasian	0
phchp046v3	SZA	45	M	Caucasian	0
phchp049v1	SZA	46	M	Caucasian	2
phchp049v2	SZA	47	M	Caucasian	1
phchp051v1	SZA	52	M	Caucasian	0
phchp052v1	SZ	60	M	Caucasian	2
phchp052v2	SZ	60	M	Caucasian	2
phchp052v3	SZ	60	M	Caucasian	2
phchp056v1	BP	36	M	Caucasian	0
phchp057v1	SZA	47	M	Caucasian	0
phchp061v1	SZ	49	M	Caucasian	0
phchp061v2	SZ	49	M	Caucasian	1
phchp061v3	SZ	50	M	Caucasian	1
phchp067v1	BP	39	M	Caucasian	0
phchp067v3	BP	40	M	Caucasian	1
phchp069v1	SZ	47	M	Caucasian	0
phchp069v2	SZ	47	M	Caucasian	0
phchp069v3	SZ	48	M	Caucasian	0
phchp070v1	SZ	52	M	African American	0
phchp070v2	SZ	52	M	African American	0
phchp070v3	SZ	52	M	African American	0
phchp073v1	SZA	50	M	Caucasian	0
phchp073v2	SZA	50	M	Caucasian	1
phchp073v3	SZA	50	M	Caucasian	0
phchp079v1	BP	44	M	Caucasian	1
phchp079v2	BP	44	M	Caucasian	0
phchp079v3	BP	45	M	Caucasian	0
phchp079v4	BP	49	M	Caucasian	0
phchp079v5	BP	50	M	Caucasian	0
phchp079v6	BP	50	M	Caucasian	0
phchp080v1	BP	44	M	Caucasian	0
phchp081v1	SZA	53	M	African American	3
phchp081v3	SZA	53	M	African American	3
phchp083v1	SZ	50	M	African American	0

phchp083v2	SZ	50	M	African American	0
phchp083v3	SZ	51	M	African American	0
phchp086v1	SZ	49	M	Caucasian	0
phchp086v2	SZ	49	M	Caucasian	0
phchp086v3	SZ	49	M	Caucasian	0
phchp092v1	BP	45	M	African American	0
phchp092v2	BP	46	M	African American	0
phchp092v3	BP	46	M	African American	0
phchp094v1	BP	41	M	African American	0
phchp099v1	SZ	49	M	Caucasian	1
phchp099v2	SZ	49	M	Caucasian	1
phchp099v3	SZ	49	M	Caucasian	0
phchp100v1	BP	28	M	Caucasian	0
phchp101v1	SZA	74	M	Caucasian	3
phchp102v1	SZA	56	M	Caucasian	2
phchp102v2	SZA	56	M	Caucasian	1
phchp102v3	SZA	56	M	Caucasian	2
phchp103v1	SZA	61	M	Caucasian	1
phchp108v1	SZ	42	M	Caucasian	0
phchp108v2	SZ	42	M	Caucasian	0
phchp108v3	SZ	43	M	Caucasian	0
phchp112v1	BP	46	M	Caucasian/Native Australian	0
phchp112v2	BP	46	M	Caucasian	0
phchp112v3	BP	47	M	Caucasian	0
phchp113v1	BP	37	M	Caucasian	1
phchp114v1	SZA	54	M	African American	0
phchp116v1	SZA	47	M	Caucasian	2
phchp117v1	BP	43	M	Caucasian	0
phchp117v2	BP	43	M	Caucasian	0
phchp117v3	BP	43	M	Caucasian	0
phchp118v1	SZA	46	M	African American	0
phchp118v2	SZA	47	M	African American	0
phchp118v4	SZA	50	M	African American	0
phchp120v1	SZ	51	M	Caucasian	0
phchp120v2	SZ	51	M	Caucasian	0
phchp120v3	SZ	51	M	Caucasian	0
phchp124v1	BP	53	M	Caucasian	0
phchp132v1	BP	51	M	Caucasian	0
phchp132v2	BP	51	M	Caucasian	0
phchp132v3	BP	52	M	Caucasian	0
phchp139v1	SZ	24	M	Caucasian	0
phchp147v1	BP	38	M	Caucasian	0
phchp147v2	BP	38	M	Caucasian	0

phchp147v3	BP	38	M	Caucasian	0
phchp148v1	SZ	25	M	Caucasian	0
phchp149v1	BP	45	M	Caucasian	0
phchp149v2	BP	45	M	Caucasian	0
phchp149v3	BP	46	M	Caucasian	0
phchp151v1	SZ	24	M	Caucasian	4
phchp151v2	SZ	24	M	Caucasian	2
phchp151v3	SZ	24	M	Caucasian	1
phchp152v1	BP	45	M	Caucasian	2
phchp154v1	SZA	51	M	African American	0
phchp154v2	SZA	51	M	African American	0
phchp154v3	SZA	52	M	African American	0
phchp158v1	BP	23	M	African American	4
phchp162v1	MDD	57	M	Caucasian	3
phchp162v2	MDD	57	M	Caucasian	2
phchp162v3	MDD	57	M	Caucasian	2
phchp167v1	MDD	49	M	Caucasian	0
phchp168v1	MDD	48	M	African American	0
phchp168v2	MDD	48	M	African American	0
phchp168v3	MDD	49	M	African American	0
phchp169v1	SZA	50	M	African American	0
phchp171v1	BP	36	M	Caucasian	0
phchp171v2	BP	36	M	Caucasian	0
phchp173v1	MDD	48	M	Caucasian	0
phchp173v2	MDD	49	M	Caucasian	0
phchp173v3	MDD	49	M	Caucasian	0
phchp174v1	MDD	54	M	Caucasian	3
phchp175v1	SZA	42	M	Caucasian	0
phchp176v1	SZ	23	M	African American	0
phchp176v2	SZ	24	M	African American	0
phchp178v1	BP	49	M	Caucasian	0
phchp185v1	SZA	51	M	African American	0
phchp185v2	SZA	51	M	African American	0
phchp185v3	SZA	52	M	African American	0
phchp186v1	BP	43	M	Caucasian	0
phchp186v2	BP	44	M	Caucasian	0
phchp186v3	BP	44	M	Caucasian	0
phchp186v4	BP	46	M	Caucasian	0
phchp187v1	SZ	49	M	African American	0
phchp187v2	SZ	49	M	African American	0
phchp188v1	SZ	54	M	African American	0
phchp189v1	SZ	25	M	Caucasian	1
phchp190v1	BP	49	M	Caucasian	1

phchp190v2	BP	49	M	Caucasian	0
phchp195v1	SZ	52	M	Caucasian	0
phchp195v2	SZ	53	M	Caucasian	0
phchp195v3	SZ	53	M	Caucasian	0
phchp196v1	MDD	56	M	African American	0
phchp196v2	MDD	56	M	African American	0
phchp196v3	MDD	57	M	African American	0
phchp199v1	SZ	49	M	African American	0
phchp199v2	SZ	49	M	African American	0
phchp199v3	SZ	50	M	African American	0
phchp200v1	MDD	56	M	Caucasian	0
phchp200v2	MDD	57	M	Caucasian	0
phchp200v3	MDD	57	M	Caucasian	0
phchp206v1	MDD	59	M	African American	0
phchp207v1	SZ	48	M	African American	1
phchp208v1	MDD	56	M	African American	0
phchp208v2	MDD	56	M	African American	0
phchp208v3	MDD	58	M	African American	0
phchp212v1	MDD	56	M	African American	0
phchp212v2	MDD	56	M	African American	0
phchp221v1	MDD	51	M	African American	0
phchp221v2	MDD	51	M	African American	0
phchp221v3	MDD	52	M	African American	0
phchp224v1	BP	59	M	Caucasian	4
phchp226v1	MDD	29	M	Caucasian	0
phchp226v2	MDD	29	M	Caucasian	0
phchp226v3	MDD	30	M	Caucasian	0
phchp227v1	MDD	55	M	Caucasian	0
phchp227v2	MDD	55	M	Caucasian	0
phchp227v3	MDD	55	M	Caucasian	0
phchp231v1	MDD	55	M	Caucasian	2
phchp234v1	BP	44	M	Caucasian	2
phchp234v2	BP	45	M	Caucasian	2
phchp234v3	BP	45	M	Caucasian	1
phchp235v1	MDD	54	M	African American	0
phchp235v2	MDD	55	M	African American	0
phchp235v3	MDD	55	M	African American	0
phchp238v1	MDD	62	M	Caucasian	0
phchp242v1	MDD	55	M	African American	0
phchp242v2	MDD	57	M	African American	0
phchp247v1	MDD	55	M	African American	0
phchp259v1	MDD	56	M	Caucasian	0
phchp259v2	MDD	57	M	Caucasian	0

phchp259v3	MDD	57	M	Caucasian	0
phchp273v1	BP	27	M	Caucasian	3
phchp273v2	BP	28	M	Caucasian	2
phchp274v1	BP	48	M	Caucasian	3
phchp274v2	BP	48	M	Caucasian	3
phchp274v3	BP	48	M	Caucasian	1
phchp283v1	SZ	51	M	Caucasian	0
phchp295v1	SZ	52	M	African American	0
phchp297v1	SZA	54	M	African American	0
phchp315v1	MDD	62	M	Caucasian	0
phchp322v1	BP	26	M	Caucasian	4
phchp324v1	MDD	33	M	African American	4
phchp327v1	MDD	42	M	Caucasian	3
phchp333v1	MDD	38	M	Caucasian	4
phchp335v1	MDD	25	M	Caucasian	3

Cohort 4: Testing cohort for future hospitalizations for suicidality (n=157) (373 chips)

(SI- Suicidal Ideation, SA- Suicide Attempts)

Subject ID visit	Diagnosi s	Age	Gend er	Ethnicity	Years Followed	Number Of First Year Hospitalizations Due To Suicidality	Number Of All Future Hospitalizations Due To Suicidality	Hospitalizations Frequency Due To Suicidality
						SI SA	SI SA	SI SA
phchp003 v1	SZ	50	M	African American	8.5	0 0	0 0	0 0
phchp003 v2	SZ	50	M	African American	8	0 0	0 0	0 0
phchp003 v3	SZ	50	M	African American	7.75	0 0	0 0	0 0
phchp004 v1	SZA	55	M	African American	8.416667	0 0	0 0	0 0
phchp004 v2	SZA	60	M	African American	2.083333	0 0	0 0	0 0
phchp004 v4	SZA	60	M	African American	1.75	0 0	0 0	0 0
phchp005 v1	SZA	45	M	Caucasian	8.083333	0 0	1 0	0.13 0
phchp005 v2	SZA	45	M	Caucasian	7.75	0 0	1 0	0.13 0
phchp005 v3	SZA	45	M	Caucasian	7.5	0 0	1 0	0.14 0
phchp006 v1	SZA	52	M	African American	5.666667	0 0	0 0	0 0
phchp006 v2	SZA	52	M	African American	5.5	0 0	0 0	0 0
phchp008 v1	SZ	47	M	African American	5.25	1 0	1 0	0.2 0
phchp009 v1	SZ	55	M	African American	6.5	0 0	0 0	0 0
phchp009 v3	SZ	56	M	African American	6	0 0	0 0	0 0
phchp010 v1	SZA	45	M	Caucasian	8	0 0	0 0	0 0
phchp010	SZA	45	M	Caucasian	7.75	0 0	0 0	0 0

v2

phchp010 v3	SZA	45	M	Caucasian	7.5	0 0	0 0	0 0
phchp012 v1	SZA	55	M	Caucasian	3.833333	0 0	1 0	0.27 0
phchp012 v2	SZA	55	M	Caucasian	3.583333	0 0	1 0	0.28 0
phchp012 v3	SZA	55	M	Caucasian	3.333333	0 0	1 0	0.3 0
phchp013 v1	SZA	53	M	African American	8	0 0	0 0	0 0
phchp013 v3	SZA	54	M	African American	7.5	0 0	0 0	0 0
phchp014 v1	SZA	55	M	African American	8.25	0 0	1 0	0.13 0
phchp015 v1	SZ	48	M	African American	8.25	0 0	1 1	0.13 0.13
phchp015 v2	SZ	49	M	African American	7.916667	0 0	1 1	0.13 0.13
phchp016 v1	SZ	54	M	African American	5.5	0 0	0 0	0 0
phchp016 v2	SZ	54	M	African American	5.25	0 0	0 0	0 0
phchp016 v3	SZ	54	M	African American	5	0 0	0 0	0 0
phchp017 v2	SZA	53	M	African American	1.5	0 0	0 0	0 0
phchp017 v3	SZA	54	M	African American	1	0 0	0 0	0 0
phchp019 v1	SZ	50	M	African American	7.666667	0 0	1 0	0.14 0
phchp019 v2	SZ	51	M	African American	7.333333	0 0	1 0	0.14 0
phchp019 v3	SZ	51	M	African American	6.916667	0 0	1 0	0.15 0
phchp020 v1	BP	62	M	Caucasian	7.083333	0 0	0 0	0 0
phchp020	BP	62	M	Caucasian	6.833333	0 0	0 0	0 0

v2

phchp020 v3	BP	63	M	Caucasian	6.5	0 0	0 0	0 0
phchp021 v1	SZA	48	M	Hispanic	7.083333	0 0	2 1	0.29 0.15
phchp021 v2	SZA	49	M	Hispanic	6.833333	0 0	2 1	0.3 0.15
phchp021 v3	SZA	49	M	Hispanic	6.5	0 0	2 1	0.31 0.16
phchp022 v1	SZ	48	M	Caucasian	7.583333	0 0	0 0	0 0
phchp022 v2	SZ	48	M	Caucasian	7.333333	0 0	0 0	0 0
phchp024 v1	SZA	49	M	African American	7.75	1 0	2 0	0.26 0
phchp025 v1	SZ	42	M	Caucasian	7.75	0 0	0 0	0 0
phchp026 v1	SZA	49	M	African American	2.916667	0 0	0 0	0 0
phchp026 v2	SZA	49	M	African American	2.666667	0 0	0 0	0 0
phchp026 v3	SZA	49	M	African American	2.333333	0 0	0 0	0 0
phchp027 v1	SZA	40	M	Caucasian	7.5	0 0	3 0	0.4 0
phchp030 v1	BP	49	M	Caucasian	6.916667	1 0	4 0	0.58 0
phchp030 v3	BP	49	M	Caucasian	6.25	0 0	3 0	0.48 0
phchp031 v1	BP	51	M	Caucasian	4.666667	0 0	0 0	0 0
phchp031 v2	BP	51	M	Caucasian	4.333333	0 0	0 0	0 0
phchp031 v3	BP	52	M	Caucasian	4.083333	0 0	0 0	0 0
phchp033 v1	SZA	48	M	Caucasian	2.5	0 0	1 0	0.4 0
phchp038	SZA	58	M	African	7.25	0 0	0 0	0 0

v1				American					
phchp038 v2	SZA	58	M	African American	7	0 0	0 0	0 0	0 0
phchp038 v3	SZA	59	M	African American	6.75	0 0	0 0	0 0	0 0
phchp039 v1	BP	52	M	Caucasian	6.75	0 0	0 0	0 0	0 0
phchp039 v3	BP	52	M	Caucasian	6.083333	0 0	0 0	0 0	0 0
phchp040 v1	SZA	50	M	Caucasian	5.833333	0 0	0 0	0 0	0 0
phchp040 v2	SZA	50	M	Caucasian	5.583333	0 0	0 0	0 0	0 0
phchp040 v3	SZA	50	M	Caucasian	5.333333	0 0	0 0	0 0	0 0
phchp041 v1	SZ	62	M	African American	7.333333	0 0	0 0	0 0	0 0
phchp042 v1	SZA	43	M	Caucasian	6	0 0	0 0	0 0	0 0
phchp042 v2	SZA	43	M	Caucasian	5.75	0 0	0 0	0 0	0 0
phchp042 v3	SZA	44	M	Caucasian	5.5	0 0	0 0	0 0	0 0
phchp045 v1	BP	36	M	Caucasian	7	0 0	0 0	0 0	0 0
phchp045 v3	BP	36	M	Caucasian	6.416667	0 0	0 0	0 0	0 0
phchp046 v1	SZA	45	M	Caucasian	7.083333	0 0	0 0	0 0	0 0
phchp046 v2	SZA	45	M	Caucasian	6.916667	0 0	0 0	0 0	0 0
phchp046 v3	SZA	45	M	Caucasian	6.666667	0 0	0 0	0 0	0 0
phchp047 v1	SZA	57	M	African American	6.333333	0 0	1 1	0.16	0.16
phchp047 v2	SZA	57	M	African American	6.083333	0 0	1 1	0.17	0.17
phchp047	SZA	58	M	African	5.833333	0 0	1 1	0.18	0.18

v3				American				
phchp048 v1	SZA	56	M	African American	5.25	0 0	0 0	0 0
phchp048 v2	SZA	57	M	African American	5.083333	0 0	0 0	0 0
phchp048 v3	SZA	57	M	African American	4.75	0 0	0 0	0 0
phchp049 v1	SZA	46	M	Caucasian	6.916667	0 0	0 0	0 0
phchp049 v2	SZA	47	M	Caucasian	6.666667	0 0	0 0	0 0
phchp051 v1	SZA	52	M	Caucasian	6.833333	0 0	0 0	0 0
phchp052 v1	SZ	60	M	Caucasian	1.166667	0 0	0 0	0 0
phchp053 v1	BP	58	M	Caucasian	6.333333	0 0	0 0	0 0
phchp053 v2	BP	58	M	Caucasian	6	0 0	0 0	0 0
phchp053 v3	BP	58	M	Caucasian	5.75	0 0	0 0	0 0
phchp057 v1	SZA	47	M	Caucasian	6.833333	0 0	0 0	0 0
phchp058 v1	SZ	56	M	African American	6.833333	0 0	0 0	0 0
phchp058 v2	SZ	56	M	African American	6.583333	0 0	0 0	0 0
phchp058 v3	SZ	56	M	African American	6.333333	0 0	0 0	0 0
phchp060 v1	SZ	62	M	Caucasian	3.5	0 0	0 0	0 0
phchp061 v1	SZ	49	M	Caucasian	7.083333	1 0	4 0	0.57 0
phchp061 v2	SZ	49	M	Caucasian	6.833333	1 0	4 0	0.59 0
phchp061 v3	SZ	50	M	Caucasian	6.166667	3 0	4 0	0.65 0
phchp062	SZ	56	M	Caucasian	6.75	0 0	0 0	0 0

v1

phchp062 v2	SZ	56	M	Caucasian	6.5	0 0	0 0	0 0
phchp062 v3	SZ	57	M	Caucasian	6.25	0 0	0 0	0 0
phchp065 v1	SZA	62	M	Caucasian	6.583333	0 0	0 0	0 0
phchp065 v2	SZA	62	M	Caucasian	6.333333	0 0	0 0	0 0
phchp065 v3	SZA	62	M	Caucasian	6.083333	0 0	0 0	0 0
phchp067 v1	BP	39	M	Caucasian	5.916667	0 0	0 0	0 0
phchp067 v3	BP	40	M	Caucasian	5.333333	0 0	0 0	0 0
phchp068 v1	SZA	57	M	African American	6.666667	0 0	0 0	0 0
phchp068 v2	SZA	57	M	African American	6.333333	0 0	0 0	0 0
phchp068 v3	SZA	57	M	African American	6	0 0	0 0	0 0
phchp069 v1	SZ	47	M	Caucasian	6.583333	0 0	0 0	0 0
phchp069 v2	SZ	47	M	Caucasian	6.333333	0 0	0 0	0 0
phchp069 v3	SZ	48	M	Caucasian	6.083333	0 0	0 0	0 0
phchp070 v1	SZ	52	M	African American	6.583333	0 0	0 0	0 0
phchp070 v2	SZ	52	M	African American	6.25	0 0	0 0	0 0
phchp070 v3	SZ	52	M	African American	6	0 0	0 0	0 0
phchp070 v4	SZ	56	M	African American	2.083333	0 0	0 0	0 0
phchp070 v5	SZ	56	M	African American	1.833333	0 0	0 0	0 0
phchp070	SZ	57	M	African	1.583333	0 0	0 0	0 0

v6		American								
phchp072 v1	SZA	60	M	Caucasian	6.5	0	0	1	0	0.16 0
phchp072 v2	SZA	60	M	Caucasian	6.25	0	0	1	0	0.16 0
phchp072 v3	SZA	60	M	Caucasian	5.916667	0	0	1	0	0.17 0
phchp073 v1	SZA	50	M	Caucasian	5.5	0	0	12	0	2.19 0
phchp073 v2	SZA	50	M	Caucasian	5.166667	0	0	12	0	2.33 0
phchp073 v3	SZA	50	M	Caucasian	4.916667	0	0	12	0	2.45 0
phchp075 v1	SZA	57	M	Caucasian	6.166667	0	0	3	0	0.49 0
phchp075 v2	SZA	58	M	Caucasian	5.916667	0	0	3	0	0.51 0
phchp075 v3	SZA	58	M	Caucasian	5.666667	0	0	3	0	0.53 0
phchp079 v1	BP	44	M	Caucasian	6.25	0	0	0	0	0 0
phchp079 v2	BP	44	M	Caucasian	6	0	0	0	0	0 0
phchp079 v3	BP	45	M	Caucasian	5.75	0	0	0	0	0 0
phchp079 v4	BP	49	M	Caucasian	1.083333	0	0	0	0	0 0
phchp080 v1	BP	44	M	Caucasian	5.416667	0	0	0	0	0 0
phchp081 v1	SZA	53	M	African American	1.166667	0	0	0	0	0 0
phchp083 v1	SZ	50	M	African American	6	0	0	0	0	0 0
phchp083 v2	SZ	50	M	African American	5.75	0	0	0	0	0 0
phchp083 v3	SZ	51	M	African American	5.5	0	0	0	0	0 0
phchp085	SZA	57	M	Caucasian	5.75	0	0	0	0	0 0

v1									
phchp085 v2	SZA	57	M	Caucasian	5.5	0 0	0 0	0 0	0 0
phchp085 v3	SZA	57	M	Caucasian	5.25	0 0	0 0	0 0	0 0
phchp086 v1	SZ	49	M	Caucasian	5.666667	0 0	0 0	0 0	0 0
phchp086 v2	SZ	49	M	Caucasian	5.416667	0 0	0 0	0 0	0 0
phchp086 v3	SZ	49	M	Caucasian	5.083333	0 0	0 0	0 0	0 0
phchp087 v1	SZA	65	M	Caucasian	5.833333	0 0	0 0	0 0	0 0
phchp087 v2	SZA	66	M	Caucasian	5.5	0 0	0 0	0 0	0 0
phchp087 v3	SZA	66	M	Caucasian	5.25	0 0	0 0	0 0	0 0
phchp088 v1	BP	44	M	Caucasian	5.916667	3 0	17 1	2.88	0.17
phchp088 v2	BP	45	M	Caucasian	5.75	2 0	16 1	2.79	0.18
phchp088 v3	BP	45	M	Caucasian	5.333333	1 0	15 1	2.82	0.19
phchp088 v4	BP	49	M	Caucasian	1.333333	8 1	8 1	6.01	0.75
phchp089 v1	SZA	33	M	Caucasian	5.75	0 0	1 0	0.18	0
phchp089 v2	SZA	33	M	Caucasian	5.5	0 0	1 0	0.19	0
phchp091 v1	SZA	55	M	Caucasian	5.333333	0 0	0 0	0 0	0 0
phchp091 v2	SZA	55	M	Caucasian	5.083333	0 0	0 0	0 0	0 0
phchp091 v3	SZA	55	M	Caucasian	4.833333	0 0	0 0	0 0	0 0
phchp092 v1	BP	45	M	African American	5.75	0 0	0 0	0 0	0 0
phchp092	BP	46	M	African	5.333333	0 0	0 0	0 0	0 0

v2				American				
phchp092 v3	BP	46	M	African American	5.166667	0 0	0 0	0 0
phchp093 v1	BP	51	M	Caucasian	4.25	1 0	2 0	0.48 0
phchp093 v2	BP	51	M	Caucasian	4	1 0	2 0	0.5 0
phchp093 v3	BP	52	M	Caucasian	3.75	0 0	1 0	0.27 0
phchp094 v1	BP	41	M	African American	4.666667	0 0	0 0	0 0
phchp095 v1	BP	28	M	Caucasian	4.25	2 0	2 0	0.48 0
phchp095 v2	BP	29	M	Caucasian	4	2 0	2 0	0.5 0
phchp095 v3	BP	29	M	Caucasian	3.75	1 0	1 0	0.27 0
phchp096 v1	SZ	55	M	African American	4.833333	0 0	0 0	0 0
phchp096 v3	SZ	56	M	African American	4.333333	0 0	0 0	0 0
phchp096 v4	SZ	58	M	African American	2.416667	0 0	0 0	0 0
phchp098 v1	SZ	59	M	African American	4.75	0 0	0 0	0 0
phchp099 v1	SZ	49	M	Caucasian	4.583333	0 0	0 0	0 0
phchp099 v2	SZ	49	M	Caucasian	4.333333	0 0	0 0	0 0
phchp099 v3	SZ	49	M	Caucasian	4	0 0	0 0	0 0
phchp100 v1	BP	28	M	Caucasian	1.583333	0 0	0 0	0 0
phchp103 v1	SZA	61	M	Caucasian	2.583333	1 0	1 0	0.39 0
phchp105 v1	SZA	59	M	Caucasian	2.833333	0 0	0 0	0 0
phchp108	SZ	42	M	Caucasian	4.083333	0 0	0 0	0 0

v1

phchp108 v2	SZ	42	M	Caucasian	3.833333	0 0	0 0	0 0
phchp108 v3	SZ	43	M	Caucasian	3.583333	0 0	0 0	0 0
phchp109 v1	BP	22	M	Caucasian	3.583333	0 0	3 0	0.84 0
phchp112 v1	BP	46	M	Caucasian/Nati ve Australian	1.583333	0 0	0 0	0 0
phchp112 v2	BP	46	M	Caucasian	1.333333	0 0	0 0	0 0
phchp112 v3	BP	47	M	Caucasian	1	0 0	0 0	0 0
phchp113 v1	BP	37	M	Caucasian	3.333333	0 0	0 0	0 0
phchp114 v1	SZA	54	M	African American	3.75	0 0	0 0	0 0
phchp115 v1	BP	67	M	Caucasian	4.416667	0 0	0 0	0 0
phchp115 v2	BP	67	M	Caucasian	4.166667	0 0	0 0	0 0
phchp115 v3	BP	68	M	Caucasian	3.916667	0 0	0 0	0 0
phchp117 v1	BP	43	M	Caucasian	3.333333	0 0	0 0	0 0
phchp117 v2	BP	43	M	Caucasian	3.083333	0 0	0 0	0 0
phchp117 v3	BP	43	M	Caucasian	2.833333	0 0	0 0	0 0
phchp118 v1	SZA	46	M	African American	3.75	0 0	0 0	0 0
phchp118 v2	SZA	47	M	African American	3.166667	0 0	0 0	0 0
phchp119 v2	SZA	56	M	African American	3.583333	0 0	0 0	0 0
phchp119 v3	SZA	56	M	African American	3.333333	0 0	0 0	0 0
phchp120	SZ	51	M	Caucasian	4	0 0	0 0	0 0

v1

phchp120 v2	SZ	51	M	Caucasian	3.75	0 0	0 0	0 0
phchp120 v3	SZ	51	M	Caucasian	3.5	0 0	0 0	0 0
phchp124 v1	BP	53	M	Caucasian	3.166667	1 0	4 0	1.27 0
phchp124 v2	BP	54	M	Caucasian	2.833333	0 0	3 0	1.06 0
phchp128 v1	BP	45	M	Caucasian	4.083333	0 0	0 0	0 0
phchp128 v2	BP	45	M	Caucasian	3.75	0 0	0 0	0 0
phchp129 v1	SZA	22	M	Caucasian	3.916667	0 0	1 0	0.26 0
phchp132 v1	BP	51	M	Caucasian	3.916667	0 0	0 0	0 0
phchp132 v2	BP	51	M	Caucasian	3.666667	0 0	0 0	0 0
phchp132 v3	BP	52	M	Caucasian	3.416667	0 0	0 0	0 0
phchp132 v4	BP	54	M	Caucasian	1.25	0 0	0 0	0 0
phchp133 v1	SZ	55	M	Caucasian	4	0 0	4 0	1 0
phchp134 v1	BP	59	M	Caucasian	4	0 0	0 0	0 0
phchp134 v2	BP	59	M	Caucasian	3.75	0 0	0 0	0 0
phchp134 v3	BP	59	M	Caucasian	3.5	0 0	0 0	0 0
phchp134 v4	BP	61	M	Caucasian	1.333333	0 0	0 0	0 0
phchp134 v5	BP	62	M	Caucasian	1.083333	0 0	0 0	0 0
phchp136 v1	BP	41	M	Caucasian	3.166667	0 0	0 0	0 0
phchp136	BP	41	M	Caucasian	2.916667	0 0	0 0	0 0

v2

phchp136 v3	BP	41	M	Caucasian	2.583333	0 0	0 0	0 0
phchp140 v1	BP	38	M	Caucasian	3.083333	0 0	0 0	0 0
phchp140 v2	BP	38	M	Caucasian	2.833333	0 0	0 0	0 0
phchp140 v3	BP	38	M	Caucasian	2.583333	0 0	0 0	0 0
phchp142 v1	BP	55	M	Caucasian	3.833333	0 0	0 0	0 0
phchp142 v2	BP	55	M	Caucasian	3.583333	0 0	0 0	0 0
phchp142 v3	BP	55	M	Caucasian	3.333333	0 0	0 0	0 0
phchp142 v4	BP	57	M	Caucasian	1.333333	0 0	0 0	0 0
phchp142 v5	BP	57	M	Caucasian	1.083333	0 0	0 0	0 0
phchp147 v1	BP	38	M	Caucasian	3.666667	0 0	0 0	0 0
phchp147 v2	BP	38	M	Caucasian	3.416667	0 0	0 0	0 0
phchp147 v3	BP	38	M	Caucasian	3.166667	0 0	0 0	0 0
phchp148 v1	SZ	25	M	Caucasian	3.416667	0 0	0 0	0 0
phchp149 v1	BP	45	M	Caucasian	3.333333	0 0	1 0	0.3 0
phchp149 v2	BP	45	M	Caucasian	3.083333	0 0	1 0	0.33 0
phchp149 v3	BP	46	M	Caucasian	2.75	0 0	1 0	0.37 0
phchp151 v1	SZ	24	M	Caucasian	3.833333	0 1	0 1	0 0.27
phchp151 v2	SZ	24	M	Caucasian	3.583333	0 0	0 0	0 0
phchp151	SZ	24	M	Caucasian	3.25	0 0	0 0	0 0

v3

phchp152 v1	BP	45	M	Caucasian	3.5	0 0	0 0	0 0
phchp153 v1	BP	55	M	Caucasian	3.333333	0 0	0 0	0 0
phchp153 v2	BP	55	M	Caucasian	3	0 0	0 0	0 0
phchp153 v3	BP	56	M	Caucasian	2.75	0 0	0 0	0 0
phchp153 v4	BP	57	M	Caucasian	1	0 0	0 0	0 0
phchp154 v1	SZA	51	M	African American	3.083333	1 0	1 0	0.33 0
phchp154 v2	SZA	51	M	African American	2.833333	1 0	1 0	0.36 0
phchp154 v3	SZA	52	M	African American	2.583333	0 0	0 0	0 0
phchp155 v1	MD D	37	M	Caucasian	3.5	0 0	0 0	0 0
phchp155 v2	MD D	37	M	Caucasian	3.25	0 0	0 0	0 0
phchp158 v1	BP	23	M	African American	3.416667	0 0	0 0	0 0
phchp161 v1	MD D	54	M	African American	3.166667	0 0	0 0	0 0
phchp161 v2	MD D	54	M	African American	2.916667	0 0	0 0	0 0
phchp161 v3	MD D	54	M	African American	2.75	0 0	0 0	0 0
phchp162 v1	MD D	57	M	Caucasian	3.416667	1 0	1 0	0.3 0
phchp162 v2	MD D	57	M	Caucasian	3	0 0	0 0	0 0
phchp162 v3	MD D	57	M	Caucasian	2.75	0 0	0 0	0 0
phchp165 v1	SZ	60	M	African American	3.333333	0 0	1 0	0.33 0
phchp165	SZ	60	M	African	3.083333	1 0	1 0	0.33 0

v2				American					
phchp165 v3	SZ	61	M	African American	2.916667	1 0		1 0	0.35 0
phchp166 v1	BP	56	M	Caucasian	3	0 0		0 0	0 0
phchp166 v2	BP	56	M	Caucasian	2.75	0 0		0 0	0 0
phchp166 v3	BP	56	M	Caucasian	2.5	0 0		0 0	0 0
phchp168 v1	MD D	48	M	African American	3.25	0 0		0 0	0 0
phchp168 v2	MD D	48	M	African American	3	0 0		0 0	0 0
phchp168 v3	MD D	49	M	African American	2.75	0 0		0 0	0 0
phchp169 v1	SZA	50	M	African American	3.333333	0 0		0 0	0 0
phchp171 v1	BP	36	M	Caucasian	3.083333	0 0		0 0	0 0
phchp171 v2	BP	36	M	Caucasian	2.75	0 0		0 0	0 0
phchp173 v1	MD D	48	M	Caucasian	2.833333	0 0		0 0	0 0
phchp173 v2	MD D	49	M	Caucasian	2.583333	0 0		0 0	0 0
phchp173 v3	MD D	49	M	Caucasian	2.333333	0 0		0 0	0 0
phchp174 v1	MD D	54	M	Caucasian	2.333333	2 0		3 0	1.29 0
phchp175 v1	SZA	42	M	Caucasian	2.5	0 0		0 0	0 0
phchp176 v1	SZ	23	M	African American	2.25	0 0		0 0	0 0
phchp176 v2	SZ	24	M	African American	1.916667	0 0		0 0	0 0
phchp178 v1	BP	49	M	Caucasian	3.25	0 0		0 0	0 0
phchp182	MD	39	M	Caucasian	3.166667	0 0		0 0	0 0

v1	D								
phchp182 v2	MD D	39	M	Caucasian	2.916667	0 0	0 0	0 0	0 0
phchp182 v3	MD D	40	M	Caucasian	2.666667	0 0	0 0	0 0	0 0
phchp183 v1	BP	48	M	Caucasian	3.083333	0 0	0 0	0 0	0 0
phchp183 v2	BP	48	M	Caucasian	2.833333	0 0	0 0	0 0	0 0
phchp184 v1	BP	64	M	Caucasian	3.083333	0 0	0 0	0 0	0 0
phchp184 v2	BP	64	M	Caucasian	2.833333	0 0	0 0	0 0	0 0
phchp184 v3	BP	64	M	Caucasian	2.583333	0 0	0 0	0 0	0 0
phchp185 v1	SZA	51	M	African American	3.083333	0 0	0 0	0 0	0 0
phchp185 v2	SZA	51	M	African American	2.833333	0 0	0 0	0 0	0 0
phchp185 v3	SZA	52	M	African American	2.416667	0 0	0 0	0 0	0 0
phchp186 v1	BP	43	M	Caucasian	3.083333	0 0	0 0	0 0	0 0
phchp186 v2	BP	44	M	Caucasian	2.833333	0 0	0 0	0 0	0 0
phchp186 v3	BP	44	M	Caucasian	2.583333	0 0	0 0	0 0	0 0
phchp187 v1	SZ	49	M	African American	3.166667	1 0	1 0	0.32 0	0 0
phchp187 v2	SZ	49	M	African American	2.833333	0 0	0 0	0 0	0 0
phchp188 v1	SZ	54	M	African American	3.166667	0 0	1 0	0.32 0	0 0
phchp190 v1	BP	49	M	Caucasian	3.083333	0 0	0 0	0 0	0 0
phchp190 v2	BP	49	M	Caucasian	2.75	0 0	0 0	0 0	0 0
phchp190	BP	50	M	Caucasian	2.5	0 0	0 0	0 0	0 0

v3

phchp192 v1	SZA	55	M	African American	3	0 0	0 0	0 0
phchp192 v2	SZA	56	M	African American	2.75	0 0	0 0	0 0
phchp192 v3	SZA	56	M	African American	2.5	0 0	0 0	0 0
phchp193 v1	BP	39	M	Hispanic	2.916667	0 0	0 0	0 0
phchp193 v3	BP	39	M	Hispanic	2.333333	0 0	0 0	0 0
phchp193 v4	BP	40	M	Hispanic	2.083333	0 0	0 0	0 0
phchp194 v1	MD D	47	M	Caucasian	3.083333	0 0	0 0	0 0
phchp194 v2	MD D	47	M	Caucasian	2.833333	0 0	0 0	0 0
phchp194 v3	MD D	47	M	Caucasian	2.583333	0 0	0 0	0 0
phchp195 v1	SZ	52	M	Caucasian	2.833333	0 0	0 0	0 0
phchp195 v2	SZ	53	M	Caucasian	2.583333	0 0	0 0	0 0
phchp195 v3	SZ	53	M	Caucasian	2.333333	0 0	0 0	0 0
phchp196 v1	MD D	56	M	African American	2.833333	0 0	0 0	0 0
phchp196 v2	MD D	56	M	African American	2.583333	0 0	0 0	0 0
phchp196 v3	MD D	57	M	African American	2.333333	0 0	0 0	0 0
phchp197 v1	SZ	56	M	Caucasian	2.416667	0 0	0 0	0 0
phchp197 v2	SZ	57	M	Caucasian	1.416667	0 0	0 0	0 0
phchp197 v3	SZ	57	M	Caucasian	1.166667	0 0	0 0	0 0
phchp198	MD	61	M	Caucasian	2.833333	0 1	0 1	0 0.36

v1	D								
phchp198 v2	MD D	61	M	Caucasian	2.583333	0 1	0 1	0 0.39	
phchp198 v4	MD D	62	M	Caucasian	2.083333	0 1	0 1	0 0.48	
phchp199 v1	SZ	49	M	African American	2.916667	0 0	0 0	0 0	
phchp199 v2	SZ	49	M	African American	2.666667	0 0	0 0	0 0	
phchp199 v3	SZ	50	M	African American	2.333333	0 0	0 0	0 0	
phchp200 v1	MD D	56	M	Caucasian	2.833333	0 0	0 0	0 0	
phchp200 v2	MD D	57	M	Caucasian	2.583333	0 0	0 0	0 0	
phchp200 v3	MD D	57	M	Caucasian	2.333333	0 0	0 0	0 0	
phchp206 v1	MD D	59	M	African American	2.833333	0 0	0 0	0 0	
phchp207 v1	SZ	48	M	African American	1.5	0 0	0 0	0 0	
phchp208 v1	MD D	56	M	African American	2.75	0 0	0 0	0 0	
phchp208 v2	MD D	56	M	African American	2.5	0 0	0 0	0 0	
phchp208 v3	MD D	58	M	African American	1	0 0	0 0	0 0	
phchp210 v1	BP	43	M	Caucasian	1.666667	0 0	0 0	0 0	
phchp210 v2	BP	43	M	Caucasian	1.416667	0 0	0 0	0 0	
phchp211 v1	SZ	62	M	Caucasian	1.75	0 0	0 0	0 0	
phchp211 v2	SZ	62	M	Caucasian	1.166667	0 0	0 0	0 0	
phchp212 v1	MD D	56	M	African American	2.666667	0 0	0 0	0 0	
phchp212	MD	56	M	African	2.416667	0 0	0 0	0 0	

v2	D			American					
phchp219 v1	BP	61	M	Caucasian	2.25	0 0		0 0	0 0
phchp219 v2	BP	61	M	Caucasian	1.916667	0 0		0 0	0 0
phchp219 v3	BP	62	M	Caucasian	1.416667	0 0		0 0	0 0
phchp221 v1	MD D	51	M	African American	2.25	0 0		0 0	0 0
phchp221 v2	MD D	51	M	African American	2	0 0		0 0	0 0
phchp221 v3	MD D	52	M	African American	1.666667	0 0		0 0	0 0
phchp222 v2	SZ	60	M	Caucasian	1.416667	0 0		0 0	0 0
phchp222 v3	SZ	61	M	Caucasian	1.166667	0 0		0 0	0 0
phchp224 v1	BP	59	M	Caucasian	1.083333	1 0		1 0	0.93 0
phchp226 v1	MD D	29	M	Caucasian	1.833333	0 0		0 0	0 0
phchp226 v2	MD D	29	M	Caucasian	1.583333	0 0		0 0	0 0
phchp227 v1	MD D	55	M	Caucasian	2.083333	0 0		0 0	0 0
phchp227 v2	MD D	55	M	Caucasian	1.833333	0 0		0 0	0 0
phchp227 v3	MD D	55	M	Caucasian	1.583333	0 0		0 0	0 0
phchp234 v1	BP	44	M	Caucasian	2.166667	0 0		0 0	0 0
phchp234 v2	BP	45	M	Caucasian	1.583333	0 0		0 0	0 0
phchp234 v3	BP	45	M	Caucasian	1.333333	0 0		0 0	0 0
phchp235 v1	MD D	54	M	African American	1.833333	0 0		0 0	0 0
phchp235	MD	55	M	African	1.583333	0 0		0 0	0 0

v2	D		American					
phchp235 v3	MD D	55	M	African American	1.25	0 0	0 0	0 0
phchp236 v1	MD D	51	M	Caucasian	2.166667	0 0	0 0	0 0
phchp236 v2	MD D	51	M	Caucasian	1.916667	0 0	0 0	0 0
phchp238 v1	MD D	62	M	Caucasian	2.166667	0 0	0 0	0 0
phchp238 v2	MD D	63	M	Caucasian	1.916667	0 0	0 0	0 0
phchp238 v3	MD D	63	M	Caucasian	1.583333	0 0	0 0	0 0
phchp242 v1	MD D	55	M	African American	2.083333	0 0	0 0	0 0
phchp247 v1	MD D	55	M	African American	2.083333	0 0	0 0	0 0
phchp248 v1	SZ	52	M	African American	2	0 0	0 0	0 0
phchp248 v2	SZ	52	M	African American	1.666667	0 0	0 0	0 0
phchp248 v3	SZ	53	M	African American	1.416667	0 0	0 0	0 0
phchp253 v1	BP	25	M	Caucasian	1.916667	0 0	0 0	0 0
phchp253 v2	BP	26	M	Caucasian	1.083333	0 0	0 0	0 0
phchp259 v1	MD D	56	M	Caucasian	1.75	0 0	0 0	0 0
phchp259 v2	MD D	57	M	Caucasian	1.416667	0 0	0 0	0 0
phchp259 v3	MD D	57	M	Caucasian	1	0 0	0 0	0 0
phchp270 v1	BP	41	M	Caucasian	1.75	0 0	0 0	0 0
phchp270 v2	BP	41	M	Caucasian	1.5	0 0	0 0	0 0
phchp273	BP	27	M	Caucasian	1.666667	0 0	0 0	0 0

v1

phchp273 v2	BP	28	M	Caucasian	1.416667	0 0	0 0	0 0
phchp274 v1	BP	48	M	Caucasian	1.666667	1 0	1 0	0.6 0
phchp274 v2	BP	48	M	Caucasian	1.416667	0 0	0 0	0 0
phchp274 v3	BP	48	M	Caucasian	1.166667	0 0	0 0	0 0
phchp275 v1	SZ	63	M	Caucasian	1	0 0	0 0	0 0
phchp276 v1	SZ	59	M	African American	1.083333	0 0	0 0	0 0
phchp277 v1	SZ	49	M	Caucasian	1.583333	0 0	0 0	0 0
phchp277 v2	SZ	50	M	Caucasian	1.333333	0 0	0 0	0 0
phchp277 v3	SZ	50	M	Caucasian	1.083333	0 0	0 0	0 0
phchp287 v1	SZA	59	M	Caucasian	1	0 0	0 0	0 0
phchp292 v1	BP	42	M	Caucasian	1.333333	0 0	0 0	0 0
phchp292 v2	BP	42	M	Caucasian	1.083333	0 0	0 0	0 0
phchp293 v1	BP	43	M	Caucasian	1.166667	0 0	0 0	0 0
phchp295 v1	SZ	52	M	African American	1.083333	0 0	0 0	0 0
phchp296 v1	BP	48	M	Caucasian	1.083333	0 0	0 0	0 0

Table S2. Top candidate biomarker genes -evidence for involvement in suicidality.

The top genes from discovery (internal score of 4), prioritization (genes with CFG score of 8 and above), and validation (nominally significant). Underlined gene symbol means reproduces suicide biomarkers findings from our earlier smaller study in bipolar participants¹. **Bold p-value is Bonferroni significant after validation in suicide completers.**

Gene symbol/ Gene Name	Probesets	Discovery (Change) Method/ Score	Prior human genetic evidence	Prior human brain expression evidence	Prior human peripheral expression evidence	Prioritizati on Total CFG Score For Suicide	Validation ANOVA p-value
SKA2 spindle and kinetochore associated complex subunit 2	225686_at	(D) DE/1 AP/1	Suicide ²	(D) PFC ²	(D) Methylation in blood ²	9	0.006 0.027
CCDC136 coiled-coil domain containing 136	226972_s_ at	(D) AP4		(D) HIP ³		8	NC
CD44 CD44 molecule (Indian blood group)	209835_x_ at	(D) DE2	Suicide ⁴	(D) BA9 and BA24 ⁴		8	NC
FADS1 fatty acid desaturase 1	208962_s_ at 208964_s_ at	(D) DE4 (I) DE1		(D) PFC ⁵		8	NC 2.08E-06
FKBP5 FK506 binding protein 5	204560_at	(D) DE2	Suicide ^{6 7 8 9 10}	(D) AMY ¹¹		8	NC
FOXN3 forkhead box N3	205021_s_ at	(D) AP2	Suicide ¹²	(D) BA24 ¹² (I) BA9 ¹²	(I) Blood ¹	8	4.99E-04
HADHA hydroxyacyl-CoA dehydrogenase/3- ketoacyl-CoA thiolase/enoyl-CoA hydratase (trifunctional protein), alpha subunit	208631_s_ at	(D) DE4		(D) HIP ³		8	NC
IL6 interleukin 6 (interferon, beta 2)	205207_at	(I) AP2		(I) PFC (BA-10) ¹³ HIP ¹⁴	(I) CSF ^{15 16} (D) Blood ¹⁷	8	1.44E-08
SAT1 spermidine/spermi ne N1- acetyltransferase 1	213988_s_ at 210592_s_ at 230333_at	(I) DE2 DE1	Suicide ¹⁸ ¹⁹	(I) PFC BA46 ²⁰	(I) Blood ¹	8	1.08E-44 1.24E-40 6.93E-12 3.09E-38

	203455_s_at						
SLC4A4 solute carrier family 4 (sodium bicarbonate cotransporter), member 4	211494_s_at at210739_x_at	(I) AP2 DE1	Suicide ²¹	(D) PFC (BA 46/10) in SZ ²²		8	5.84E-05 0.002
MAOB monoamine oxidase B	204041_at	(I) DE1		(I) PFC ²³	(D) Blood ²⁴	7	8.11E-08
AHCYL1 adenosylhomocysteinase-like 1	207464_at	(D) DE2 AP1		(D) PFC ²²		6	2.22E-06 0.0238
AKT1S1 AKT1 substrate 1 (proline-rich)	224982_at	(D) DE2 AP2		(D) HIP ³		6	1.97E-07 3.54E-07
ALDH3A2 aldehyde dehydrogenase 3 family, member A2	210544_s_at; 210544_s_at	(D) DE2 AP1		(I) BA4, BA44 and Lateral thalamus ²⁵		6	3.73E-05 0.0348
ARHGAP26 Rho GTPase activating protein 26	205068_s_at	(I) DE1	Linkage D5S1480 ²⁶	(D) DLFPC ²⁷		6	9.91E-08
BCL2 B-cell CLL/lymphoma 2	207005_s_at 207004_at	(D) DE1 (I) AP1		(D) PFC ²⁸		6	0.0003 0.02
C20orf27	218081_at; 50314_i_at	(D) DE2		(I) ACC ²⁷		6	2.80E-13 2.47E-05
CAPNS1 calpain, small subunit 1	200001_at	(D) DE2		(D) PFC ²⁹ (I) BA4 ³⁰		6	0.0002
CDC42EP4 CDC42 effector protein (Rho GTPase binding) 4	218062_x_at	(D) AP2		(D) BA11 ³⁰		6	1.16E-06
CDH4 cadherin 4, type 1, R-cadherin (retinal)	220227_at	(I) DE2		(D) DLFPC ²⁷		6	0.00908
CXCL11 chemokine (C-X-C motif) ligand 11	210163_at	(I) AP2		(D) NAC ²⁷		6	0.0293
EHBP1 EH domain binding protein 1	212650_at	(D) DE 4	Suicide ³¹			6	NC
EIF5A eukaryotic translation initiation factor 5A	201123_s_at	(D) DE2		(D) PFC ³²		6	0.0006
EMID1 EMI domain containing 1	1564251_a_t	(I) DE2		(D) BA4 ³⁰		6	0.0346
FAM49B family with sequence similarity	217535_at	(I) AP2		(D) HIP ³		6	0.0188

49, member B							
FH fumarate hydratase	203032_s_ at	(D) DE2		(I) PFC (I) ²⁹		6	5.10E-11
GCOM1 GRINL1A complex locus 1	228568_at	(I) DE2		(D) BA44 ²⁰	(I) Blood ¹	6	2.13E-09
GPM6B glycoprotein M6B	236116_at; 209170_s_ at	(D) AP1 DE1	Linkage DXS1224 DXS8019 ³³	(D) BA 8/9, BA 46, BA 44 ³³ (I) BA46 ²⁰		6	2.32E-07 0.0119
HOMEZ homeobox and leucine zipper encoding	231868_at	(D) DE2 AP1		(D) HIP ³		6	1.38E-12 8.27E-05
HPCAL1 hippocalcin-like 1	1560154_a _at	(I) DE2		(I) BA4 ³⁰		6	7.50E-05
IKBKB inhibitor of kappa light polypeptide gene enhancer in B-cells, kinase beta	211027_s_ at	(D) DE2		(I) ACC ²⁷		6	1.24E-06
ITGB4 integrin, beta 4	211905_s_ at	(D) DE2		(D) PFC ³²		6	0.0290
LDLRAP1 low density lipoprotein receptor adaptor protein 1	221790_s_ at	(D) DE2		(I) ACC ²⁷		6	2.24E-16
LOC728543 uncharacterized LOC728543	234133_s_ at	(D) DE2		(D) ACC ²⁷		6	1.97E-05
MAP2K5 mitogen-activated protein kinase kinase 5	211370_s_ at	(D) DE2		(D) HIP ³⁴		6	0.00612
MAPK9 mitogen-activated protein kinase 9	225781_at	(I) DE2		(I) PFC ³⁵		6	0.0132
NEAT1 nuclear paraspeckle assembly transcript 1 (non- protein coding)	224565_at	(I) DE2		(I) NAC ²⁷		6	2.33E-24
NMB neuromedin B	205204_at	(D) DE2		(D) Dorsovagal complex ³⁶		6	0.0149
PAFAH1B2 platelet-activating factor acetylhydrolase 1b, catalytic subunit 2 (30kDa)	210160_at	(D) DE2		(I) NAC ²⁷		6	3.66E-08
PCBD2	231085_s_	(D)		(D)		6	0.0345

pterin-4 alpha-carbinolamine dehydratase/dimerization cofactor of hepatocyte nuclear factor 1 alpha (TCF1) 2	at	DE2		HIP ³			
PIK3C2A phosphatidylinositol-4-phosphate 3-kinase, catalytic subunit type 2 alpha	1553694_a_at	(D) DE2		(D) PFC ³⁷ BA8/9 ³⁰		6	3.75E-09
PKP4 plakophilin 4	201927_s_at	(D) AP1		(I) NAC ²⁷		6	0.0486
PTK2 protein tyrosine kinase 2	241453_at	(I) DE2		(D) Frontopolar cortex ³⁸		6	1.11E-33
RASL11B RAS-like, family 11, member B	219142_at	(I) AP2		(D) DLFPC ²⁷		6	0.0124
SLC5A3 solute carrier family 5 (sodium/myo-inositol cotransporter), member 3	213167_s_at	(D) DE2		(D) NAC ²⁷		6	1.06E-11
SNORA68 small nucleolar RNA, H/ACA box 68	1566402_a t1566403_at	(I) DE2 AP1		(D) HIP ³		6	0.00310 0.00813
SOD2 superoxide dismutase 2, mitochondrial	216841_s_at	(I) DE1		(I) PFC ³⁹		6	0.00042
SYNE2 spectrin repeat containing, nuclear envelope 2	242774_at; 1558392_at	(D) DE2 DE1		(D) HIP ³		6	6.83E-08 0.0183
TCF7L2 transcription factor 7-like 2 (T-cell specific, HMG-box)	212762_s_at	(I) DE1		(D) HIP ³		6	0.0280
TGOLN2 trans-golgi network protein 2	203834_s_at	(D) AP1	Linkage D2S428 D2S1790 ^{40, 41}	(I) BA4 ³⁰		6	1.10E-07
TRAK2 trafficking protein, kinesin binding 2	202124_s_at	(D) DE2		(I) NAC ²⁷		6	0.006
ADRBK1 adrenergic, beta, receptor kinase 1	201401_s_at	(D) DE1		(I) PFC (Brodmann area 9) ⁴²		5	2.22E-05
AHCYL2 adenosylhomocysteinase-like 2	212814_at	(D) AP1		(I) NAC ²⁷		5	0.00103

AIMP1 aminoacyl tRNA synthetase complex-interacting multifunctional protein 1	227605_at; 202542_s_at; 235594_at	(D) AP1 DE2		(I) NAC ²⁷		5	8.37E-05; 0.0138; 0.0301
ATP6VOE1 ATPase, H ⁺ -transporting, lysosomal 9kDa, V0 subunit e1	236527_at	(D) AP1		(D) BA11 ³⁰	(I) Blood ¹	5	3.80E-07
BRAF v-raf murine sarcoma viral oncogene homolog B	236402_at	(I) DE1		(D) HIP ⁴³		5	6.07E-29
BRCC3 BRCA1/BRCA2-containing complex, subunit 3	216521_s_at	(D) DE1		(I) PFC ²⁹		5	5.79E-08
C1orf61	205103_at	(I) DE1		(I) NAC ²⁷		5	2.95E-13
CALR calreticulin	212953_x_at	(I) DE1		(D) Frontopolar cortex ³⁸		5	6.20E-06
CAMK2B calcium/calmodulin-dependent protein kinase II beta	209956_s_at	(I) DE1		(I) PFC ³⁵		5	0.00025
CAV1 caveolin 1, caveolae protein, 22kDa	212097_at	(I) DE1		(I) ACC ²⁷		5	7.31E-07
CHD2 chromodomain helicase DNA binding protein 2	1554014_a_t	(I) DE1		(I) NAC ²⁷		5	2.40E-24
CLTA clathrin, light chain A	1560434_x_at	(I) DE1		(I) Frontopolar cortex ³⁸		5	0.00064
CNP 2',3'-cyclic nucleotide 3' phosphodiesterase	1557943_a_t	(D) AP1		(D) HIP ³		5	0.0315
COL9A2 collagen, type IX, alpha 2	232542_at	(D) DE1		(I) NAC ²⁷		5	0.00044
CPSF2 cleavage and polyadenylation specific factor 2, 100kDa	233208_x_at	(D) AP1		(I) ACC ²⁷		5	0.00171
CREM cAMP responsive element modulator	241740_at	(I) AP1		(D) Frontopolar cortex ³⁸		5	1.08E-06

CTTN cortactin	214782_at 201059_at	(I) DE1		(D) Frontopolar cortex ³⁸		5	3.46E-18 0.0363
CUL4B cullin 4B	210257_x_at	(D) DE1		(I) ACC ²⁷		5	0.00776
DAAM2 dishevelled associated activator of morphogenesis 2	212793_at	(I) DE1		(I) NAC ²⁷		5	0.00856
DAB2 Dab, mitogen-responsive phosphoprotein, homolog 2 (Drosophila)	201279_s_at	(I) DE1		(I) NAC ²⁷		5	0.00098
DLL1 delta-like 1 (Drosophila)	227938_s_at	(D) DE1		(D) AMY ⁴⁴ (I) DLPFC ⁴⁴		5	0.00016
DNAH2 dynein, axonemal, heavy chain 2	215840_at	(D) DE1		(I) ACC ²⁷		5	0.00637
DPP4 dipeptidyl-peptidase 4	211478_s_at	(D) DE4	Linkage D2S1353 ₄₅			5	1.43E-07
G2E3 G2/M-phase specific E3 ubiquitin protein ligase	223254_s_at	(D) AP1		(I) ACC ²⁷		5	0.0214
GABARAPL1 GABA(A) receptor-associated protein like 1	208869_s_at	(I) DE1		(D) BA20, BA10, BA4 ₆ ⁴⁶		5	3.48E-28
GLUL glutamate-ammonia ligase	215001_s_at	(I) DE1		(D) BA44 ²⁰ AMY, BA46, BA44, BA45 ⁴⁶ frontopolar cortex ³⁸		5	3.96E-15
GUK1 guanylate kinase 1	200075_s_at	(D) DE1		(D) HIP ³ PFC ²⁹		5	0.0362
HELZ helicase with zinc finger	240486_at	(I) DE1		(I) BA4 ³⁰		5	3.56E-06
IGHG1 immunoglobulin heavy constant gamma 1 (G1m marker)	241074_at	(I) DE1		(D) ACC ²⁷		5	0.0342
IL1B interleukin 1, beta	205067_at 39402_at	(I) DE1		(I) PFC (BA-10) ¹³	(I) Blood ¹	5	0.0338; 0.0380
JAK3 Janus kinase 3	211108_s_at	(D) DE1		(D) DLPFC ²⁷		5	5.42E-11

JUN jun proto-oncogene	201464_x_at 213281_at 201466_s_at	(I) DE1 AP1		(D) HIP ³		5	2.63E-51 1.02E-41 2.21E-08
JUNB jun B proto-oncogene	201473_at	(I) DE1		(D) HIP ³		5	1.09E-18
LAPTM4B lysosomal protein transmembrane 4 beta	1554679_a_at	(D) AP1		(I) BA8/9 ³⁰		5	0.0113
LHFP lipoma HMGIC fusion partner	218656_s_at	(I) DE1		(I) NAC ²⁷	(I) Blood ¹	5	1.27E-06
LPAR1 lysophosphatidic acid receptor 1	204036_at	(D) AP1		(I) NAC ²⁷		5	7.67E-06
MAGI3 membrane associated guanylate kinase, WW and PDZ domain containing 3	226770_at	(D) AP1		(D) DLFPC ²⁷		5	0.0292
MARCKS myristoylated alanine-rich protein kinase C substrate	213002_at 201670_s_at	(I) DE1		(I) HIP, PFC ⁴⁷ PFC{Punzi, 2014 #36847}	(I) Blood ¹	5	1.51E-06; 0.0004
MBP myelin basic protein	225408_at	(D) AP1		(I) NAC ²⁷		5	6.74E-10
MCRS1 microspherule protein 1	202556_s_at	(D) DE1		(D) HIP ³		5	3.29E-05
MEF2C myocyte enhancer factor 2C	207968_s_at	(D) DE1		(D) HIP ³⁴		5	3.47E-09
MT1E metallothionein 1E	212859_x_at	(I) DE1		(D) ACC ²⁷ PFC (BA 46/10) ₃₂		5	0.00020
MT1H metallothionein 1H	206461_x_at	(I) DE1		(D) ACC, NAC ²⁷ PFC (BA 46/10) ²²		5	5.62E-05
MT2A metallothionein 2A	212185_x_at	(I) DE1		(D) ACC ²⁷		5	0.00218
NDRG1 N-myc downstream regulated 1	200632_s_at	(I) DE1		(I) NAC ²⁷		5	3.21E-22
NUCB2 nucleobindin 2	229838_at	(I) DE1		(I) Edinger-Westphal nucleus (midbrain) ⁴⁸		5	0.0124

OGFR opioid growth factor receptor	211513_s_at	(D) DE1		(D) HIP ³		5	0.00053
PCDH9 protocadherin 9	238919_at	(D) AP1		(D) BA45; BA46 ²⁰		5	0.0215
PHF20L1 PHD finger protein 20-like 1	219606_at	(I) DE1		(I) ACC ²⁷		5	7.97E-05
PLEKHB1 pleckstrin homology domain containing, family B (ejectins) member 1	209504_s_at	(D) DE1		(I) NAC ²⁷		5	6.07E-07
POLR2D polymerase (RNA) II (DNA directed) polypeptide D	214144_at	(D) AP1		(I) ACC ²⁷		5	1.02E-09
PRKACA protein kinase, cAMP-dependent, catalytic, alpha	202801_at	(D) AP1		(D) PFC, NAC ⁴⁹		5	0.0324
PRKCB protein kinase C, beta	227824_at; 230437_s_at	(D) DE1 AP1		(D) PFC, HIP ⁵⁰		5	3.15E-09 1.34E-04 0.003
PSMB4 proteasome (prosome, macropain) subunit, beta type, 4	202243_s_at	(D) DE1		(D) PFC ²⁹		5	9.98E-07
PTEN phosphatase and tensin homolog	204053_x_at 222176_at	(I) DE1		(I) PFC, HIP ⁵¹	(I) Blood¹	5	7.66E-17 0.0003
RAB35 RAB35, member RAS oncogene family	205461_at	(D) DE2		(I) ACC ²⁷		5	0.00034
RBMX RNA binding motif protein, X-linked	1556336_a_t 213762_x_at	(D) DE1		(D) HIP (D) ³ BA 8/9, BA 11 ³³ (D) (Suicide) ³³ (I) ACC ²⁷		5	1.40E-13 0.0232
RECK reversion-inducing cysteine-rich protein with kazal motifs	216153_x_at	(I) DE1		(I) ACC ²⁷	(I) Blood¹	5	0.00093
RNASEL ribonuclease L (2',5'-oligoisoadenylate synthetase-dependent)	221287_at	(D) AP1		(D) HIP ³		5	6.05E-06

SELENBP1 selenium binding protein 1	214433_s_at	(D) DE1		(I) PFC ²⁹		5	0.00019
SHISA2 shisa family member 2	230493_at	(I) DE1		(I) NAC ²⁷		5	0.00107
SLC35E1 solute carrier family 35, member E1	222263_at	(D) AP1		(D) BA4 ³⁰		5	0.00651
SNAP23 synaptosomal-associated protein, 23kDa	209131_s_at	(D) AP1		(D) BA44 ²⁰ BA24 ⁵²		5	0.00039
TM4SF1 transmembrane 4 L six family member 1	209386_at	(I) DE1		(D) PFC (BA 46/10) ²²		5	6.12E-11
TMEM254 transmembrane protein 254	218174_s_at	(D) DE1		(D) HIP ³		5	1.35E-08
TMEM259 transmembrane protein 259	212574_x_at; 212575_at; 213986_s_at	(D) DE1		(I) ACC ²⁷		5	0.0007; 0.003; 0.004
TNS1 tensin 1	218863_s_at	(D) DE1 AP2		(I) NAC ²⁷		5	6.29E-05; 0.0123
TPBG trophoblast glycoprotein	203476_at	(I) DE1		(I) ACC ²⁷		5	6.66E-06
TPD52L1 tumor protein D52-like 1	203786_s_at	(I) DE1		(D) PFC (BA 46/10) ²²		5	1.52E-16
TRIM23 tripartite motif containing 23	210995_s_at	(D) DE1		(I) PFC (BA 46/10) ²²		5	3.28E-14
TSC22D3 TSC22 domain family, member 3	208763_s_at	(I) DE1		(D) PFC, AMY ⁵³		5	2.01E-05
TSPAN33 tetraspanin 33	225775_at	(D) AP1		(D) HIP ³		5	0.00302
VMP1 vacuole membrane protein 1	1569003_a_t	(I) DE1		(D) NAC ²⁷		5	0.00291
VPREB3 pre-B lymphocyte 3	220068_at	(D) DE1		(D) HIP ³		5	0.00104
ZFP36 ZFP36 ring finger protein	201531_at	(I) DE1		(D) Orbitofrontal cortex ⁵⁴		5	8.72E-27
ZFYVE21 zinc finger, FYVE domain containing 21	219929_s_at	(D) AP1		(D) HIP ³		5	1.69E-04
ZHX2 zinc fingers and	203556_at	(I) DE1		(D) PFC		5	0.00198

homeoboxes 2				BA46/10 ³²			
ZNF519 zinc finger protein 519	1568873_a_t	(D) AP1		(I) ACC ²⁷		5	0.01164
B4GALT1 UDP-Gal:betaGlcNAc beta 1,4-galactosyltransferase, polypeptide 1	228498_at	(I) DE 4				4	NC
BTBD3 BTB (POZ) domain containing 3	243461_at	(I) DE 4				4	NC
CADM1 cell adhesion molecule 1	237259_at	(I) DE4				4	NC
CATSPER3 cation channel, sperm associated 3	230981_at	(D) AP4				4	NC
CCL28 chemokine (C-C motif) ligand 28	224240_s_at	(D) AP4				4	NC
CLIP4 CAP-GLY domain containing linker protein family, member 4	219944_at	(D) DE4				4	NC
CTBS chitobiase, di-N-acetyl-	218924_s_at	(I) DE 4				4	NC
CYorf17 chromosome Y open reading frame 17	234274_at	(D) DE 4				4	NC
DCAF15 DDB1 and CUL4 associated factor 15	221851_at	(D) DE4				4	0.0302
DEPDC5 DEP domain containing 5	234548_at	(I) AP4				4	NC
DTNA dystrobrevin, alpha	211493_x_at	(I) AP4				4	NC
EMR2 egf-like module containing, mucin-like, hormone receptor-like 2	232009_at	(I) DE 4				4	NC
EPHA10 EPH receptor A10	243717_at	(D) DE4				4	0.00801
ERG v-ets avian erythroblastosis virus E26 oncogene homolog	213541_s_at	(D) DE 4				4	NC
ERV3-2	222139_at	(I)				4	NC

endogenous retrovirus group 3, member 2		DE 4					
FAM183CP family with sequence similarity 183, member C, pseudogene	1569887_a_at	(I) AP4				4	NC
HIST1H2BO histone cluster 1, H2bo	214540_at	(I) DE4				4	4.77E-10
HS3ST3B1 heparan sulfate (glucosamine) 3-O-sulfotransferase 3B1	1561908_a_at	(D) AP4				4	NC
IQCH IQ motif containing H	224165_s_at	(D) DE4				4	0.00324
KCTD21 potassium channel tetramerization domain containing 21	229873_at	(I) DE 4				4	NC
KERA keratocan	220504_at	(I) DE4				4	0.00021
KIF2C kinesin family member 2C	211519_s_at	(D) AP4				4	0.00056
KLHDC3 kelch domain containing 3	214383_x_at	(D) DE4			(D) Blood ¹	4	1.57E-17
LAMB1 laminin, beta 1	238608_at	(I) AP4				4	NC
LOC100129917 uncharacterized LOC100129917	236411_at	(D) DE4				4	0.00225
LOC100289061 uncharacterized LOC100289061	1563071_a_t	(I) AP4				4	NC
LOC100996345 uncharacterized LOC100996345	240697_at	(D) DE4				4	7.20E-05
LOC285500 uncharacterized LOC285500	1558451_a_t	(I) DE 4				4	NC
MED21 mediator complex subunit 21	209363_s_at	(D) AP4				4	0.07426
PCIF1 PDX1 C-terminal inhibiting factor 1	222045_s_at	(D) AP4				4	NC
PLEC plectin	216971_s_at	(D) DE 4				4	NC
RAB36 RAB36, member RAS oncogene family	211471_s_at	(I) AP4				4	NC

RAD23A RAD23 homolog A (<i>S. cerevisiae</i>)	201039_s_at	(D) DE 4				4	NC
RHAG Rh-associated glycoprotein	206145_at	(D) AP4				4	NC
ROBO4 roundabout, axon guidance receptor, homolog 4 (<i>Drosophila</i>)	220758_s_at	(D) AP4				4	NC
RP11-669N7.2 uncharacterized LO C283352	1561757_a_at	(I) AP4				4	NC
RPL6P17 ribosomal protein L6 pseudogene 17	216816_at	(D) AP4				4	NC
SETD8 SET domain containing (lysine methyltransferase) 8	220200_s_at	(D) DE 4				4	NC
SH3GLB2 SH3-domain GRB2-like endophilin B2	218813_s_at	(D) DE4				4	0.00017
ST6GALNAC4 ST6 (alpha-N-acetyl-neuraminyl-2,3-beta-galactosyl-1,3)-N-acetylgalactosaminide alpha-2,6-sialyltransferase 4	221551_x_at	(D) DE4				4	3.22E-05
TEX10 testis expressed 10	1558702_a_t	(D) AP4				4	0.00281
TEX261 testis expressed 261	1559675_a_t	(D) AP4				4	0.00427
TFDP1 transcription factor Dp-1	242538_at	(I) AP4				4	0.00238
TMLHE-AS1 TMLHE antisense RNA 1	1560797_s_at	(I) DE 4				4	NC
TMSB15B thymosin beta 15B	1556964_s_at	(D) DE4				4	0.007
TUBGCP3 tubulin, gamma complex associated protein 3	215739_s_at	(D) DE2	Suicide ¹²			4	2.05E-16
TXNRD2 thioredoxin reductase 2	210803_at	(D) AP4				4	0.0425
USP12 ubiquitin specific peptidase 12	229987_at	(D) AP4				4	0.2723

VEGFB vascular endothelial growth factor B	203683_s_at	(D) AP4				4	5.13E-07
ZBTB7A zinc finger and BTB domain containing 7A	213299_at	(D) DE4				4	2.05E-06

Table S3. Top candidate biomarker genes - mechanistic understanding. The top genes from discovery (internal score of 4), prioritization (genes with CFG score of 8 and above), and validation (nominally significant). Underlined gene symbol means overlaps with findings from our previous mood and psychosis biomarker studies. DLPFC- Dorsolateral Prefrontal Cortex ; APC- Anterior Prefrontal Cortex; ACC- Anterior Cingulate Cortex; AMY-Amygdala; VT- Ventral Tegmentum; HIP- Hippocampus; NAC-Nucleus Accumbens.Alc-alcoholism.

Gene symbol/ Gene Name	Probesets	Discovery (Change) Method/ Score	Prioritiz ation Total CFG Score For Suicide	Valida tion ANOVA p- value	Psychiatric disorders genetic evidence	Psychiat ric disorder s brain expressi on evidenc e	Psychiatri c disorders periphera l expressio n evidenc e	Psychi atric Co- morbidi ty CFG Score For Other Disord ers	Evidenc e for involv ement in apopto sis
SKA2 spindle and kinetochore associated complex subunit 2	225686_at	(D) DE1 AP1	9	0.006 0.027				0	—
CCDC136 coiled-coil domain containing 136	226972_s_at	(D) AP4	8	NC			(I) Hallucina tions blood ⁵⁵	2	—
CD44 CD44 molecule (Indian blood group)	209835_x_at	(D) DE2	8	NC		(D) Alc Frontal Cortex ⁵⁶	(D) Autistic Spectrum Disorder Lymphobl astoid ⁵⁷ MDD CSF ⁵⁸ (I) BP lymphocy	6	—

							te ⁵⁹		
FADS1 fatty acid desaturase 1	208962_s_at 208964_s_at	(D) DE4 (I) DE1	8	NC 2.08E-06			(I) SZ lymphoblastoid ⁶⁰	2	-
FKBP5 FK506 binding protein 5	204560_at	(D) DE2	8	NC	PTSD ⁶¹ 62 63 64 BP ⁷ MDD ^{65 66} 67 SZ ⁶⁸	(I) BP PFC DLPFC ⁶⁹ 70 Alc hippocampus ⁷¹	(D) PTSD Blood ⁷² Social Isolation Blood ⁷³ Alc Blood ⁷⁴ (I) MDD Blood ^{75 76}	8	-
FOXN3 forkhead box N3	205021_s_at	(D) AP2	8	4.99E-04	SZ ⁷⁷ 78 79 80 BP ⁸¹	(I) MDD AMY and cingulate cortex ⁸² SZ cerebellar cortex ⁸³	(I) SZ IPSC ⁸⁴	8	-
HADHA hydroxyacyl-CoA dehydrogenase/ 3-ketoacyl-CoA thiolase/enoyl- CoA hydratase (trifunctional protein), alpha subunit	208631_s_at	(D) DE4	8	NC				0	-
IL6 interleukin 6 (interferon, beta 2)	205207_at	(I) AP2	8	1.44E-08	SZ ^{85 86 87 88} Stress ^{89 90} MDD ⁹¹	(I) SZ DLPFC BA46 ⁹²	(I) BP blood ^{93 94} 95 96 97 98 MDD blood ⁹⁹ 100 101 102 103 104 105 106 107 108 109 saliva ¹¹⁰ Antidepressants Plasma ¹¹¹ SZ	8	-

								blood ¹³¹		
SAT1 spermidine/spermine N1-acetyltransferase 1	213988_s_at 210592_s_at 230333_at 203455_s_at	(I) DE2 DE1	8	1.08E-44 1.24E-40 6.93E-12 3.09E-38	Anxiety ¹³²	(I) MDD AMY and cingulate cortex ⁸²	(I) MDD blood ¹³³	8	Yes ¹³⁴	
SLC4A4 solute carrier family 4 (sodium bicarbonate cotransporter), member 4	211494_s_at 210739_x_at	(I) AP2 DE1	8	5.84E-05 0.002			(D) SZ IPSC ⁸⁴	2	—	
MAOB monoamine oxidase B	204041_at	(I) DE1	7	8.11E-08	Alc ¹³⁵ SZ ¹³⁶	(I) BP ACC, DLPFC cortex ¹³⁷ PFC ¹³⁸ MDD AMY and cingulate cortex ⁸² Alc prefrontal cortex ¹³⁹	(I) Alc human glioblastoma and neuroblastoma cell lines ¹³⁹	8	Yes ¹⁴⁰	
AHCYL1 adenosylhomocysteinase-like 1	207464_at	(D) DE2 AP1	6	2.22E-06 0.0238				0	—	
AKT1S1 AKT1 substrate 1 (proline-rich)	224982_at	(D) DE2 AP2	6	1.97E-07 3.54E-07			(I) Circadian abnormalities Blood ¹⁴¹	2	—	
ALDH3A2 aldehyde dehydrogenase 3 family, member A2	210544_s_at 210544_s_at	(D) DE2 AP1	6	3.73E-05 0.0348		(D) BP Brain ⁷⁰		4	—	
ARHGAP26 Rho GTPase activating protein 26	205068_s_at	(I) DE1	6	9.91E-08	SZ ⁷⁷ ₁₄₂ Autistic Spectrum Disorder ¹⁴³	(D) BP Brain ⁷⁰	(I) BP Blood ¹⁴⁴ Panic Disorder Lymphocyte ¹⁴⁵	8	—	

							(D) MDD Fibroblast ¹⁴⁶		
BCL2 B-cell CLL/lymphoma 2	207005_s_at 207004_at	(D) DE1 (I) AP1	6	0.000 3 0.02	BP ^{147 148} ¹⁴⁹ Anxiety ¹⁵⁰ SZ ¹⁴⁸	(D) BP Frontal Cortex ¹⁵¹ PTSD DLPFC BA46 ¹⁵²	(D) Mood stabilizer s Blood ¹⁵³ BP Lymphoblast ¹⁴⁷ (I) Alc Blood ¹⁵⁴ Pain Vertebral disc ¹⁵⁵	8	—
C20orf27	218081_at 50314_i_at	(D) DE2	6	2.80E- 13 2.47E- 05		(D) BP Brain ⁷⁰	(I) MDD Fibroblast ¹⁴⁶	6	—
CAPNS1 calpain, small subunit 1	200001_at	(D) DE2	6	0.000 2		(D) SZ ¹⁵⁶ PFC ¹⁵⁶ DLPFC ¹⁵⁷ BP Brain ⁷⁰ (I) Alc frontal ⁵⁶	(I) SZ Fibroblast ¹⁵⁸	6	—
CDC42EP4 CDC42 effector protein (Rho GTPase binding) 4	218062_x_at	(D) AP2	6	1.16E- 06		(D) MDD AMY and cingulat e cortex ⁸²	(D) Alc Blood ¹⁵⁴	6	—
CDH4 cadherin 4, type 1, R-cadherin (retinal)	220227_at	(I) DE2	6	0.009 08	MDD ¹⁵⁹ ADHD ¹⁶⁰ SZ ¹⁶¹ BP ¹⁶¹	(D) MDD DLPFC ¹⁶²		6	—
CXCL11	210163_at	(I)	6	0.029				0	—

chemokine (C-X-C motif) ligand 11		AP2		3						
EHBP1 EH domain binding protein 1	212650_at	(D) DE 4	6.00	NC		MDD ¹⁵⁹ Addictions ₃₁	(D) ASD Autistic Spectrum Disorder cerebral cortex ¹⁶³	(D) SZ lymphoblastoid ⁶⁰ (D) Sleep Circadian abnormalities blood ¹⁴¹	8.00	-
EIF5A eukaryotic translation initiation factor 5A	201123_s_at	(D) DE2	6	0.000 6			(D) Addictions, Stimulants NAC ¹⁶⁴	(I) BP Blood ¹⁴⁴	6	-
EMID1 EMI domain containing 1	1564251_at	(I) DE2	6	0.034 6			(D) BP Blood ¹⁶⁵	2		
FAM49B family with sequence similarity 49, member B	217535_at	(I) AP2	6	0.018 8			(D) BP Brain ⁷⁰		4	
FH fumarate hydratase	203032_s_at	(D) DE2	6	5.10E- 11			(D) MDD AMY and cingulate cortex ⁸² BP Brain ⁷⁰ BP Hippocampus ¹⁶⁶	(D) Stress Blood ¹⁶⁷ MDD MNC ¹⁶⁸ (I) BP Whole blood ¹⁴⁴	6	-
GCOM1 GRINL1A complex locus 1	228568_at	(I) DE2	6	2.13E- 09			(D) PTSD Blood ¹⁶⁹	2	-	
GPM6B glycoprotein M6B	236116_at 209170_s_at	(D) AP1 DE1	6	2.32E- 07 0.011 9			(D) Alc Frontal cortex ⁵⁶ MDD DLPFC ¹⁶² Tourette Syndrome	(D) Delusions Blood ⁵⁵ SZ lymphocyte ⁵⁹	6	-

							Putame n ¹⁷⁰ (I) Alc Frontal, motor cortex ¹⁷¹			
							SZ Cerebell um ¹⁷²			
HOMEZ homeobox and leucine zipper encoding	231868_at	(D) DE2 AP1	6	1.38E- 12 8.27E- 05				0	—	
HPCAL1 hippocalcin-like 1	1560154_a_at	(I) DE2	6	7.50E- 05	MDD ¹⁷³	(D) BP Brain ⁷⁰	(I) Migraine Lymphocy te ¹⁷⁴	8	—	
IKBKB inhibitor of kappa light polypeptide gene enhancer in B-cells, kinase beta	211027_s_at	(D) DE2	6	1.24E- 06			(D) Relaxatio n Response Blood ¹⁷⁵	2	—	
ITGB4 integrin, beta 4	211905_s_at	(D) DE2	6	0.029 0		(I) Alc Hippoca mpus ⁷¹	(D) SZ IPSC ⁸⁴	6	—	
LDLRAP1 low density lipoprotein receptor adaptor protein 1	221790_s_at	(D) DE2	6	2.24E- 16				0	—	
LOC728543 uncharacterized LOC728543	234133_s_at	(D) DE2	6	1.97E- 05				0	—	
MAP2K5 mitogen- activated protein kinase kinase 5	211370_s_at	(D) DE2	6	0.006 12	Addictions, Stimulants ¹⁷⁶ Addictions, Nicotine ¹⁷⁷ MDD ¹⁷⁸ Agoraphob ia ¹⁷⁸	(D) MDD AMY and cingulat e cortex ⁸² BP brain ⁷⁰		6	—	
MAPK9 mitogen- activated protein kinase 9	225781_at	(I) DE2	6	0.013 2		(D) BP Brain ⁷⁰		4	—	

NEAT1 nuclear paraspeckle assembly transcript 1 (non-protein coding)	224565_at	(I) DE2	6	2.33E- 24				0	-
NMB neuromedin B	205204_at	(D) DE2	6	0.014 9	SZ ^{179, 180}	(I) MDD AMY and cingulat e cortex ⁸²		6	-
PAFAH1B2 platelet- activating factor acetylhydrolase 1b, catalytic subunit 2 (30kDa)	210160_at	(D) DE2	6	3.66E- 08				0	-
PCBD2 pterin-4 alpha- carbinolamine dehydratase/dim erization cofactor of hepatocyte nuclear factor 1 alpha (TCF1) 2	231085_s_at	(D) DE2	6	0.034 5			(D) Hallucina tions Blood ⁵⁵ (I) Alcohol Blood ¹⁵⁴	2	-
PIK3C2A phosphatidylinos itol-4-phosphate 3-kinase, catalytic subunit type 2 alpha	1553694_a_at	(D) DE2	6	3.75E- 09	BP ¹⁸¹ SZ ¹⁸¹ ₁₈₀	(D) MDD ACC ¹⁸² (I) BP ACC ¹⁸²	(D) Delusions Blood ⁵⁵ (I) Hallucina tions Blood ⁵⁵	8	Yes ¹⁸³ _{184, 185}
PKP4 plakophilin 4	201927_s_at	(D) AP1	6	0.048 6		(D) BP brain ⁷⁰ (I) MDD AMY cingulat e cortex ⁸² Alc PFC ¹⁸⁶ SZ PFC ¹⁸⁷	(I) Delusions blood ⁵⁵ MDD Fibroblast ¹⁴⁶	6	-
PTK2 protein tyrosine kinase 2	241453_at	(I) DE2	6	1.11E- 33	SZ ¹⁸⁸	(I) BP Brain ⁷⁰ Alc	(I) Pain Vertebral disc ¹⁵⁵	8	-

						Superior frontal cortex ¹⁸⁹	(D) Hallucinations Blood ⁵⁵ Delusions Blood ⁵⁵ Autistic Spectrum Disorder lymphocyte ⁵⁷ Relaxation Response Blood mononuclear ear cells ¹⁷⁵		
RASL11B RAS-like, family 11, member B	219142_at	(I) AP2	6	0.012 4				0	-
SLC5A3 solute carrier family 5 (sodium/myo-inositol cotransporter), member 3	213167_s_at	(D) DE2	6	1.06E- 11			(D) Stress Blood ¹⁶⁷	2	Yes ^{190, 191}
SNORA68 small nucleolar RNA, H/ACA box 68	1566402_at15 66403_at	(I) DE2 AP1	6	0.003 10 0.008 13				0	-
SOD2 superoxide dismutase 2, mitochondrial	216841_s_at	(I) DE1	6	0.000 42	Addictions, Stimulants ¹⁹²	(D) MDD AMY and cingulate cortex ⁸² SZ Hippocampus ¹⁹³	(D) Antidepressants MNC ¹⁶⁸	6	-
SYNE2 spectrin repeat containing, nuclear envelope 2	242774_at 1558392_at	(D) DE2 DE1	6	6.83E- 08 0.018 3	SZ ^{194 195 196}		(D) Circadian abnormalities Whole blood ¹⁴¹ (I) BP Lymphocyte ¹⁹⁷	2	Yes ¹⁹⁸
TCF7L2	212762_s_at	(I)	6	0.028	SZ ^{199 200}	(I)	(D)	8	Yes ^{205,}

transcription factor 7-like 2 (T-cell specific, HMG-box)		DE1		0	BP ²⁰¹ Autistic Spectrum Disorder ²⁰²	SZ PFC ²⁰³ hippocampus Alc HIP ⁷¹	BP Blood ²⁰⁴		206, 207,208 ,209, 210
TGOLN2 trans-golgi network protein 2	203834_s_at	(D) AP1	6	1.10E-07		(D) BP brain ⁷⁰ (I) MDD AMY and cingulate cortex ⁸² SZ PFC (left dorsolateral) ²¹¹	(D) Stress Blood ¹⁶⁷ SZ Blood ²¹² (I) Relaxation Response Blood ¹⁷⁵	6	—
TRAK2 trafficking protein, kinesin binding 2	202124_s_at	(D) DE2	6	0.006		(I) BP APC ²¹³		4	—
ADRBK1 adrenergic, beta, receptor kinase 1	201401_s_at	(D) DE1	5	2.22E-05		(D) SZ DLPFC (Brodmann area 9/46) suprarenal (BA24) anterior cingulated cortex ^{214 215}	(D) MDD Blood ²¹⁶ Pain vertebral disc ¹⁵⁵	6	—
AHCYL2 adenosylhomocysteinase-like 2	212814_at	(D) AP1	5	0.00103	Autistic Spectrum Disorder ²¹⁷			2	—
AIMP1 aminoacyl tRNA synthetase complex-interacting multifunctional protein 1	227605_at 202542_s_at 235594_at	(D) AP1 DE2	5	8.37E-05 0.0138 0.0301				0	
ATP6V0E1 ATPase, H ⁺ -transporting, lysosomal 9kDa, V0 subunit e1	236527_at	(D) AP1	5	3.80E-07	BP ²¹⁸	(D) MDD ACC, DLPFC ²¹⁹ (I)	(D) Alcohol Blood ¹⁵⁴ Stress Blood ¹⁶⁷	6	—

						BP ACC, DLPFC ²¹⁹			
BRAF v-raf murine sarcoma viral oncogene homolog B	236402_at	(I) DE1	5	6.07E- 29		(D) SZ, BP Frontal cortex ²²⁰		4	—
BRCC3 BRCA1/BRCA2- containing complex, subunit 3	216521_s_at	(D) DE1	5	5.79E- 08		(D) BP Brain ⁷⁰	(D) Circadian abnormal ities Blood ¹⁴¹	6	—
C1orf61	205103_at	(I) DE1	5	2.95E- 13			(D) SZ IPSC ⁸⁴	2	—
CALR calreticulin	212953_x_at	(I) DE1	5	6.20E- 06	SZA ²²¹	(D) MDD DLPFC ²²²	(I) Pain Vertebral disc ¹⁵⁵ (D) Relaxatio n Response Blood ¹⁷⁵	8	—
CAMK2B calcium/calmodu lin-dependent protein kinase II beta	209956_s_at	(I) DE1	5	0.000 25		(I) BP Frontal DLPFC Broadm ann Area 9 ^{223 224} SZ Frontal cortex ²²³ (D) BP Brain ⁷⁰ Cocaine, Cannabi s, PCP abuse Anterior PFC ²²⁵ SZ Suprage nual ACC ²¹⁵		4	—
CAV1 caveolin 1, caveolae protein,	212097_at	(I) DE1	5	7.31E- 07	SZ ¹⁸⁸	DLPFC (BA46)		6	Yes ²²⁸

22kDa						Alzheimer's Disease ²²⁶	(D) ²²⁷ (BP)			
CHD2 chromodomain helicase DNA binding protein 2	1554014_at	(I) DE1	5	2.40E-24		Autistic Spectrum Disorder ²⁰²	(I) BP Brain ⁷⁰	(D) Mood Blood ¹⁶⁵ SZ Blood ²²⁹ MDD Fibroblast ¹⁴⁶	8	-
CLTA clathrin, light chain A	1560434_x_at	(I) DE1	5	0.00064			(D) BP Brain ⁷⁰	(D) Alzheimer's Disease Blood ²³⁰	6	-
CNP 2',3'-cyclic nucleotide 3' phosphodiesterase	1557943_at	(D) AP1	5	0.0315		SZ ²³¹	(D) SZ PFC ²³² 231 233 Addictions, Alcohol Frontal cortex ⁵⁶ 189 Occipital cortex ²³⁴ MDD Middle temporal gyrus corresponding to Brodmann's area 21 (BA21) ²³⁵ AMY ²³⁶	(D) Circadian abnormalities Blood ¹⁴¹	8	-
COL9A2 collagen, type IX, alpha 2	232542_at	(D) DE1	5	0.00044					0	Yes ²³⁷
CPSF2 cleavage and polyadenylation specific factor 2, 100kDa	233208_x_at	(D) AP1	5	0.00171					0	-
CREM cAMP	241740_at	(I)	5	1.08E-		Panic	(I)		6	-

responsive element modulator		AP1		06	Disorder 238 239	MDD AMY and cingulate cortex 82 (D) Addictions, Alcohol Frontal, motor cortex 171			
CTTN cortactin	214782_at 201059_at	(I) DE1	5	3.46E-18 0.0363		(D) MDD AMY and cingulate cortex 82	(I) Mood Stabilizers NT2.D1 cells 240 (D) Stress, Social Isolation Blood ⁷³	6	-
CUL4B cullin 4B	210257_x_at	(D) DE1	5	0.00776				0	-
DAAM2 dishevelled associated activator of morphogenesis 2	212793_at	(I) DE1	5	0.00856	SZ 241	(I) SZ Superior temporal gyrus 242 Addictions, Alcohol PFC I ¹⁸⁶ MDD AMY ²⁴³	(I) SZ Blood ²⁴⁴ 229 (D) PTSD Blood ²⁴⁵	8	-
DAB2 Dab, mitogen-responsive phosphoprotein, homolog 2 (Drosophila)	201279_s_at	(I) DE1	5	0.00098			(I) Delusions Blood ⁵⁵	2	-
DLL1 delta-like 1 (Drosophila)	227938_s_at	(D) DE1	5	0.00016		(I) BP Brain ⁷⁰	(D) SZ iPSC ⁸⁴ PTSD PBMC ²⁴⁶	6	Yes ²⁴⁷
DNAH2 dynein,	215840_at	(D) DE1	5	0.00637			(D) Autistic	2	-

axonemal, heavy chain 2							Spectrum Disorder Blood ²⁴⁸		
DPP4 dipeptidyl-peptidase 4	211478_s_at	(D) DE4	5	1.43E-07	SZ ²⁴⁹		(D) PTSD Blood ¹⁶⁹ (I) SZ Blood ²⁰⁴	4	—
G2E3 G2/M-phase specific E3 ubiquitin protein ligase	223254_s_at	(D) AP1	5	0.021 4				0	
GABARPL1 GABA(A) receptor-associated protein like 1	208869_s_at	(I) DE1	5	3.48E-28		(D) BP Brain ⁷⁰	(D) Panic Disorder Lymphocyte ¹⁴⁵	6	Yes ²⁵⁰
GLUL glutamate-ammonia ligase	215001_s_at	(I) DE1	5	3.96E-15		(I) SZ Thalamus ²⁵¹ BP Anterior cingulate cortex, DLPFC ²¹⁹ SZ DLPFC (BA 46) ²⁵² BP DLPFC (BA 46) ²⁵² (D) MDD DLPFC ²⁵³ Locus coeruleus (LC)forebrain ²⁵⁴ DLPFC ¹⁶²	(I) Circadian abnormalities Blood ¹⁴¹ Mood stabilizers Blood ²⁵⁷ BP Blood ¹⁴⁴	6	—

							Anterior cingulate cortex, DLPFC 219			
							SZ DLPFC 255			
							PFC gray matter 256			
GUK1 guanylate kinase 1	200075_s_at	(D) DE1	5	0.036 2				(I) MDD Plasma 258	2	—
HELZ helicase with zinc finger	240486_at	(I) DE1	5	3.56E-06				SZ Blood ²¹²	0	—
IGHG1 immunoglobulin heavy constant gamma 1 (G1m marker)	241074_at	(I) DE1	5	0.034 2			(I) SZ APC ²¹³ BP APC ²¹³ (D) SZA APC ²¹³	(I) Hallucinations Blood ⁵⁵ (D) Mood Blood ¹⁶⁵ Autistic Spectrum Disorder Lymphocyte ⁵⁷ Stress, Social Isolation Blood ⁷³	6	—
IL1B interleukin 1, beta	205067_at 39402_at	(I) DE1	5	0.033 8 0.038 0		(I) BP 259 260 SZ 261 Addictions, Alcohol 262 MDD 263 264 Anxiety 263	(I) Alzheimer's Disease Hippocampal cornu ammonis 1 (CA1) 265 BP Frontal cortex 266 SZ	(I) BP Blood ^{93 94} SZ Plasma ²⁶⁸ Serum ¹¹³ 115 Blood ²⁶⁹ 270 CSF ²⁷¹ MDD Blood	8	—

					Stress 89 90	DLPFC (BA46) 92	²⁷² Plasma 107			
					Tourette e Syndrome Putamen ¹⁷⁰ (D) MDD DLPFC ²⁶⁷	Serum ²⁷³ PTSD Serum ²⁷⁴ PBMC ¹²⁷ Autistic Spectrum Disorder Blood ²⁷⁵ Stress, Social Isolation Leukocyte ⁷³ Psychosis Serum ¹²¹ Antipsychotics Serum ¹²² Anxiety Plasma ¹⁰⁷ (D) Borderline e Personality Disorder Blood ¹²⁴ Stress Blood ¹²⁴				
JAK3 Janus kinase 3	211108_s_at	(D) DE1	5	5.42E-11				0	-	
JUN jun proto-oncogene	201464_x_at 213281_at 201466_s_at	(I) DE1 AP1	5	2.63E-51 1.02E-41 2.21E-08	(I) SZ cerebellar vermis ²⁷⁶ middle temporal gyrus ²⁷⁷ thalamus ²³⁶ MDD middle temporal gyrus	(I) Pain Vertebral disc ¹⁵⁵ SZ Fibroblast ²⁷⁸ (D) SZ blood ²⁷⁸		6	-	

							²³⁵ AMY ²³⁶			
JUNB jun B proto-oncogene	201473_at	(I) DE1	5	1.09E-18			(I) MDD PFC ²⁷⁹ Addictions, Alcohol PFC ¹⁸⁶	(I) SZ Blood ²⁴⁴ Pain Blood ²⁸⁰	6	-
LAPTM4B lysosomal protein transmembrane 4 beta	1554679_a_at	(D) AP1	5	0.0113			(D) BP Brain ⁷⁰	(D) Mood Blood ¹⁶⁵ PTSD Blood ¹⁶⁹	6	-
LHFP lipoma HMGIC fusion partner	218656_s_at	(I) DE1	5	1.27E-06		SZ ²⁸¹			2	-
LPAR1 lysophosphatidic acid receptor 1	204036_at	(D) AP1	5	7.67E-06		BP ¹⁴⁸ SZ ¹⁴⁸	(I) BP Parietal cortex ²⁸² Anterior cingulate cortex ¹⁸² (D) MDD Middle temporal gyrus corresponding to Brodmann's area 21 (BA21) ²³⁵ AMY ²³⁶ Anterior cingulate cortex ¹⁸²	(I) Mood Blood ¹⁶⁵ (D) SZ Lymphocytes ²⁸³	8	-
MAGI3 membrane associated guanylate kinase,	226770_at	(D) AP1	5	0.0292					0	-

WW and PDZ domain containing 3										
MARCKS myristoylated alanine-rich protein kinase C substrate	213002_at 201670_s_at	(I) DE1	5	1.51E-06 0.0004		(I) MDD PFC ²⁸⁴ SZ DLPFC (left hemisphere, Brodmann area 46) ²⁸⁵ SZ DLPFC Brodmann Area 9 ²²⁴ (D) BP Brain ⁷⁰ SZ DLPFC (Brodmann areas 9/46) ²⁸⁶	(D) MDD Blood ²⁸⁷	6	—	
MBP myelin basic protein	225408_at	(D) AP1	5	6.74E-10	SZ ²⁸⁸ BP ⁷⁹ 148 Primary Visual Cortex ²⁹¹ Alzheimer's Disease Frontal	(D) BP Hippocampus ²⁸⁹ APC ²¹³ SZ Hippocampal formation ²⁸⁹ PFC (BA-9) (D) ²⁹⁰ Mood Blood ¹⁶⁵ Pain Vertebral disc ¹⁵⁵	(D) SZ blood ²¹² (I) Mood Blood ¹⁶⁵ Pain Vertebral disc ¹⁵⁵	8		

						white matter ²⁹² MDD AMY ²³⁶ DLPFC BA9 ²²⁴			
MCRS1 microspherule protein 1	202556_s_at	(D) DE1	5	3.29E-05		(I) MDD Pituitary ²⁹³		4	Yes ²⁹⁴
MEF2C myocyte enhancer factor 2C	207968_s_at	(D) DE1	5	3.47E-09	SZ ²⁴⁹ BP ⁸⁰	(D) BP Brain ⁷⁰	(D) Chronic Stress Blood ¹⁶⁷ (I) PTSD Blood ¹⁶⁹	8	—
MT1E metallothionein 1E	212859_x_at	(I) DE1	5	0.00020		(I) BP Brain ⁷⁰ SZ DLPFC ²⁹⁵ (D) SZ Frontal cortex ²⁹⁶		4	Yes ²⁹⁷
MT1H metallothionein 1H	206461_x_at	(I) DE1	5	5.62E-05		(I) BP Brain ⁷⁰ SZ DLPFC ²⁹⁵ (D) MDD AMY and cingulate cortex ⁸²	(I) Mood Stabilizer NT2.D1 cells ²⁴⁰	5	—
MT2A metallothionein 2A	212185_x_at	(I) DE1	5	0.00218		(I) BP Brain ⁷⁰ SZ Middle		4	Yes ³⁰⁰ , ³⁰¹ , ³⁰² ,

						tempora l gyrus ₂₇₇ DLPFC _{298 295} Thalamu s ₂₉₉ Addictio ns, Alcohol Hippoca mpus ⁷¹ (D) MDD AMY and cingulat e cortex ₈₂			
NDRG1 N-myc downstream regulated 1	200632_s_at	(I) DE1	5	3.21E- 22		(I) SZ APC ²¹³	4	—	
NUCB2 nucleobindin 2	229838_at	(I) DE1	5	0.012 4			0	Yes ³⁰³	
OGFR opioid growth factor receptor	211513_s_at	(D) DE1	5	0.000 53			0	Yes ³⁰⁴ , ₃₀₅	
PCDH9 protocadherin 9	238919_at	(D) AP1	5	0.021 5		(D) Hallucina tions Blood ⁵⁵	2	—	
PHF20L1 PHD finger protein 20-like 1	219606_at	(I) DE1	5	7.97E- 05		(I) SZ PFC ²⁰³ (D) BP Brain ⁷⁰	4	Yes ³⁰⁶	
PLEKHB1 pleckstrin homology domain containing, family B (ejectins) member 1	209504_s_at	(D) DE1	5	6.07E- 07		(D) Alcohol Blood ¹⁵⁴ SZ IPSC ⁸⁴	2	—	
POLR2D polymerase (RNA) II (DNA directed) polypeptide D	214144_at	(D) AP1	5	1.02E- 09		(D) BP Brain ⁷⁰	4	—	
PRKACA protein kinase, cAMP-	202801_at	(D) AP1	5	0.032 4		(D) SZ DLPFC	(D) MDD CSF ⁵⁸	6	—

dependent, catalytic, alpha							¹⁵⁷ BP Brain ⁷⁰			
PRKCB protein kinase C, beta	227824_at 230437_s_at	(D) DE1 AP1	5	3.15E- 09 1.34E- 04 0.003	MDD ³⁰⁷ Autistic Spectrum Disorder ³⁰⁸ ³⁰⁹	Autistic Spectrum Disorder ³⁰⁸ MDD Anterior cingulat e cortex ¹⁸² SZ DLPFC (left hemisph ere, Broadm an area ²⁸⁵ ⁴⁶)	(D) BP Anterior cingulat e cortex ¹⁸² Autistic Spectru m Disorder Tempor al neocort ex ³⁰⁸ (I) MDD Anterior cingulat e cortex ¹⁸² SZ DLPFC (left hemisph ere, Broadm an area ²⁸⁵ ⁴⁶)	(D) Chronic Stress Blood ¹⁶⁷ BP Blood ³¹⁰ PTSD Blood ³¹¹ (I) SZ Blood ³¹²	8	Yes ³¹³
PSMB4 proteasome (prosome, macropain) subunit, beta type, 4	202243_s_at	(D) DE1	5	9.98E- 07	MDD ³¹⁴ ³¹⁵	(D) SZ DLPFC ³¹⁶ (D) SZA DLPFC ³¹⁶ (D) BP Brain ⁷⁰ (I) MDD AMY and cingulat e cortex ⁸²		6	—	
PTEN phosphatase and	204053_x_at 222176_at	(I) DE1	5	7.66E- 17		(I) SZ	(D) PTSD	6	—	

tensin homolog				0.000 3		PFC ²⁰³	Blood ¹⁶⁹		
RAB35 RAB35, member RAS oncogene family	205461_at	(D) DE2	5	0.000 34		(D) BP Brain ⁷⁰		4	-
RBMX RNA binding motif protein, X-linked	1556336_at 213762_x_at	(D) DE1	5	1.40E- 13 0.023 2				0	-
RECK reversion-inducing-cysteine-rich protein with kazal motifs	216153_x_at	(I) DE1	5	0.000 93			(I) PTSD Blood ¹⁶⁹	2	Yes ³¹⁷ ³¹⁸ ³¹⁹ ,
RNASEL ribonuclease L (2',5'-oligooadenylyl ester synthetase-dependent)	221287_at	(D) AP1	5	6.05E- 06		(D) BP Brain ⁷⁰	(I) SZ IPSC ⁸⁴	6	-
SELENBP1 selenium binding protein 1	214433_s_at	(D) DE1	5	0.000 19	Autistic Spectrum Disorder ³²⁰ SZ ³²¹	(I) SZ Hippocampus ³²¹ DLPFC ³²²	(D) SZ Blood ²⁴⁴ (I) Circadian abnormalities Blood ¹⁴¹	8	Yes ³²³
SHISA2 shisa family member 2	230493_at	(I) DE1	5	0.001 07				0	-
SLC35E1 solute carrier family 35, member E1	222263_at	(D) AP1	5	0.006 51		(I) MDD AMY and cingulate cortex ⁸²		4	-
SNAP23 synaptosomal-associated protein, 23kDa	209131_s_at	(D) AP1	5	0.000 39			(D) BP Blood ¹⁴⁴ Stress, Social Isolation Leukocyte ⁷³	2	Yes ³²⁴
TM4SF1 transmembrane 4 L six family member 1	209386_at	(I) DE1	5	6.12E- 11			(D) SZ lymphocyte ⁵⁹	2	-
TMEM254 transmembrane protein 254	218174_s_at	(D) DE1	5	1.35E- 08				0	-

TMEM259 transmembrane protein 259	212574_x_at 212575_at 213986_s_at	(D) DE1	5	0.000 7 0.003 0.004			(D) SZ Blood ³²⁵ PTSD Blood ¹⁶⁹ (I) MDD Leukocyte S ³²⁶	2	—
TNS1 tensin 1	218863_s_at	(D) DE1 AP2	5	6.29E- 05 0.012 3			(D) MDD AMY and cingulate cortex ⁸² (I) Circadian abnormalities Blood ¹⁴¹	6	Yes ³²⁷ , ³²⁸ ,
TPBG trophoblast glycoprotein	203476_at	(I) DE1	5	6.66E- 06			(I) Mood stabilizers neuroblastoma VPA ²⁸²	4	—
TPD52L1 tumor protein D52-like 1	203786_s_at	(I) DE1	5	1.52E- 16			(I) Mood Stabilizers NT2.D1 cells ²⁴⁰	1	—
TRIM23 tripartite motif containing 23	210995_s_at	(D) DE1	5	3.28E- 14			(D) BP Brain ⁷⁰ BP Orbitofrontal Cortex ³²⁹ SZ DLPFC ²⁹⁸	4	Yes ³³⁰
TSC22D3 TSC22 domain family, member 3	208763_s_at	(I) DE1	5	2.01E- 05			(D) Delusions Blood ⁵⁵ Addictions, Alcohol HIP ⁷¹ MDD Blood ¹⁰⁶	6	Yes ³³¹
TSPAN33	225775_at	(D)	5	0.003				0	—

tetraspanin 33		AP1		02						
VMP1 vacuole membrane protein 1	1569003_at	(I) DE1	5	0.002 91					0	Yes ³³²
VPREB3 pre-B lymphocyte 3	220068_at	(D) DE1	5	0.001 04					0	-
ZFP36 ZFP36 ring finger protein	201531_at	(I) DE1	5	8.72E- 27			(I) MDD DLPFC 162	(I) Pain Blood 280	6	-
ZFYVE21 zinc finger, FYVE domain containing 21	219929_s_at	(D) AP1	5	1.69E- 04		SZ 249			2	-
ZHX2 zinc fingers and homeoboxes 2	203556_at	(I) DE1	5	0.001 98				(I) BP lymphocy te ⁵⁹	2	333
ZNF519 zinc finger protein 519	1568873_at	(D) AP1	5	0.011 64				(I) Autistic Spectrum Disorder Blood 248	2	Yes ³³⁴
B4GALT1 UDP- Gal:betaGlcNAc beta 1,4- galactosyltransfe rase, polypeptide 1	228498_at	(I) DE 4	4	NC			(D) Addictio ns ³³⁵ NAC	(I) Mood Stabilizer s NT.D1 cells ²⁴⁰	3	-
BTBD3 BTB (POZ) domain containing 3	243461_at	(I) DE 4	4	NC		OCD ³³⁶			2	Yes ³³⁷
CADM1 cell adhesion molecule 1	237259_at	(I) DE4	4	NC		Autistic Spectrum Disorder 338	(I) BP brain ⁷⁰ (D) BP APC ²¹³	(D) Mood Blood ¹⁶⁵ MDD blood ²⁸⁷	8	-
CATSPER3 cation channel, sperm associated 3	230981_at	(D) AP4	4	NC					0	-
CCL28 chemokine (C-C motif) ligand 28	224240_s_at	(D) AP4	4	NC				(D) BP blood ¹⁶⁵ Sleep Circadian abnormal ities blood ¹⁴¹ (I)	2	Yes ^{340 341}

							Anxiety SSRI lymphobl astoid ³³⁹		
CLIP4 CAP-GLY domain containing linker protein family, member 4	219944_at	(D) DE4	4	NC				0	-
CTBS chitobiase, di-N-acetyl-	218924_s_at	(I) DE 4	4	NC			(I) MDD PFC ¹⁶²	4	-
CYorf17 chromosome Y open reading frame 17	234274_at	(D) DE 4	4	NC				0	-
DCAF15 DDB1 and CUL4 associated factor 15	221851_at	(D) DE4	4	0.030 2			(I) Addictio n, Alcohol HIP ⁷¹	4	-
DEPDC5 DEP domain containing 5	234548_at	(I) AP4	4	NC			(D) BP PFC ⁷⁰ (I) BP PFC ³⁴²	4	-
DTNA dystrobrevin, alpha	211493_x_at	(I) AP4	4	NC		BP ⁸⁰	(I) BP PFC ³⁴² (D) MDD AMY and cingulate cortex ⁸² Tourette Syndrome putamen ¹⁷⁰	6	-
EMR2 egf-like module containing, mucin-like, hormone receptor-like 2	232009_at	(I) DE 4	4	NC			(D) Chronic stress blood ¹⁶⁷	2	Yes ³⁴³
EPHA10 EPH receptor	243717_at	(D) DE4	4	0.008 01				0	-

A10										
ERG v-ets avian erythroblastosis virus E26 oncogene homolog	213541_s_at	(D) DE 4	4	NC		Addictions ³⁴⁴			1	-
ERV3-2 endogenous retrovirus group 3, member 2	222139_at	(I) DE 4	4	NC			(I) SZ blood ²²⁹	2	-	
FAM183CP family with sequence similarity 183, member C, pseudogene	1569887_a_at	(I) AP4	4	NC				0	-	
HIST1H2BO histone cluster 1, H2bo	214540_at	(I) DE4	4	4.77E-10			(I) Relaxation Response Blood ¹⁷⁵	2	-	
HS3ST3B1 heparan sulfate (glucosamine) 3-O-sulfotransferase 3B1	1561908_a_at	(D) AP4	4	NC		Aging Longevity ³⁴⁵	(I) SZ fibroblast S ⁸⁴	4	-	
IQCH IQ motif containing H	224165_s_at	(D) DE4	4	0.00324			(D) Delusions Blood ⁵⁵	2	-	
KCTD21 potassium channel tetramerization domain containing 21	229873_at	(I) DE 4	4	NC				0	-	
KERA keratocan	220504_at	(I) DE4	4	0.00021				0	-	
KIF2C kinesin family member 2C	211519_s_at	(D) AP4	4	0.00056				0	-	
KLHDC3 kelch domain containing 3	214383_x_at	(D) DE4	4	1.57E-17		(D) BP brain ⁷⁰	(D) BP Lymphocyte ¹⁹⁷	6	-	
LAMB1 laminin, beta 1	238608_at	(I) AP4	4	NC		Personality Conscientiousness ³⁴⁶	(D) Aging PFC ³⁴⁷ BP PFC ⁷⁰ (I) Addictions FC ¹⁸⁹	(I) Hallucinations blood ⁵⁵	6.00	-
LOC100129917	236411_at	(D)	4	0.002					0	Yes

uncharacterized LOC100129917		DE4		25						348
LOC100289061 uncharacterized LOC100289061	1563071_at	(I) AP4	4	NC					0	-
LOC100996345 uncharacterized LOC100996345	240697_at	(D) DE4	4	7.20E-05					0	-
LOC285500 uncharacterized LOC285500	1558451_at	(I) DE 4	4	NC					0	-
MED21 mediator complex subunit 21	209363_s_at	(D) AP4	4	0.074 26			(D) BP ⁷⁰		4	-
PCIF1 PDX1 C-terminal inhibiting factor 1	222045_s_at	(D) AP4	4	NC			(D) MDD Fibroblast ₁₄₆	2	Yes ₃₄₉	
PLEC plectin	216971_s_at	(D) DE 4	4	NC			(D) BP ¹⁴⁴ blood	2	Yes ₃₅₀	
RAB36 RAB36, member RAS oncogene family	211471_s_at	(I) AP4	4	NC					0	-
RAD23A RAD23 homolog A (<i>S. cerevisiae</i>)	201039_s_at	(D) DE 4	4	NC			(I) MDD AMY and cingulat e cortex ₈₂	4	Yes ₃₅₁	
RHAG Rh-associated glycoprotein	206145_at	(D) AP4	4	NC			(I) Delusions blood ₅₅	2	-	
ROBO4 roundabout, axon guidance receptor, homolog 4 (<i>Drosophila</i>)	220758_s_at	(D) AP4	4	NC					0	-
RP11-669N7.2 uncharacterized LOC283352	1561757_a_at	(I) AP4	4	NC					0	-
RPL6P17 ribosomal protein L6 pseudogene 17	216816_at	(D) AP4	4	NC					0	-
SETD8 SET domain containing (lysine methyltransferas e) 8	220200_s_at	(D) DE 4	4	NC		SZ ²⁴⁹	(D) Mood blood ₁₆₅	4	Yes _{352 353}	
SH3GLB2 SH3-domain GRB2-like	218813_s_at	(D) DE4	4	0.000 17			(D) BP ⁷⁰ Brain	(D) BP Blood	6	-

								144		
endophilin B2 ST6GALNAC4 ST6 (alpha-N-acetyl-neuraminyl-2,3-beta-galactosyl-1,3)-N-acetylgalactosamine alpha-2,6-sialyltransferase 4										
	221551_x_at	(D) DE4	4	3.22E-05					0	-
TEX10 testis expressed 10	1558702_at	(D) AP4	4	0.002 81					0	-
TEX261 testis expressed 261	1559675_at	(D) AP4	4	0.004 27				(I) Mood Blood ¹⁶⁵ (D) Hallucinations Blood ⁵⁵	2	-
TFDP1 transcription factor Dp-1	242538_at	(I) AP4	4	0.002 38					0	-
TMLHE-AS1 TMLHE antisense RNA 1	1560797_s_at	(I) DE 4	4	NC					0	-
TMSB15B thymosin beta 15B	1556964_s_at	(D) DE4	4	0.007				(I) MDD Fibroblast ¹⁴⁶	2	-
TUBGCP3 tubulin, gamma complex associated protein 3	215739_s_at	(D) DE2	4	2.05E-16				(D) BP Blood ¹⁴⁴	2	-
TXNRD2 thioredoxin reductase 2	210803_at	(D) AP4	4	0.042 5					0	Yes ³⁵⁴
USP12 ubiquitin specific peptidase 12	229987_at	(D) AP4	4	0.272 3				(I) Sleep Circadian abnormalities blood ¹⁴¹	2	Yes ³⁵⁵
VEGFB vascular endothelial growth factor B	203683_s_at	(D) AP4	4	5.13E-07					0	-
ZBTB7A zinc finger and BTB domain containing 7A	213299_at	(D) DE4	4	2.05E-06				(I) MDD AMY and cingulate cortex ⁸²	4	-

Table S4. Top candidate biomarker genes - drugs that modulate these markers in the opposite direction.

Gene symbol/ Gene Name	Discovery (Change) Method/ Score	Prioritization Total CFG Score For Suicide	Validation ANOVA p-value	Modulated by Omega-3	Modulated by Lithium	Modulated by Clozapine	Other Drugs
CCDC136 coiled-coil domain containing 136	(D) AP4	8	NC			(I) Mouse VT ³⁵⁶	
CD44 CD44 molecule (Indian blood group)	(D) DE2	8	NC			(I) Mouse Blood ³⁵⁶	
IL6 interleukin 6 (interferon, beta 2)	(I) AP2	8	1.44E-08	(D) Human Blood ³⁵⁷			tocilizumab siltuximab
SAT1 spermidine/spermine N1-acetyltransferase 1	(I) DE2 DE1	8	1.08E-44	(D) Mouse Blood ³⁵⁸			
MAOB monoamine oxidase B	(I) DE1	7	8.11E-08				selegiline
ARHGAP26 Rho GTPase activating protein 26	(I) DE1	6	9.91E-08			(D) Mouse VT ³⁵⁶	
BCL2 B-cell CLL/lymphoma 2	(D) DE1	6	0.0003		(I) Human Blood ¹⁵³	(I) Rat Dentate gyrus Hippocampus ³⁵⁹	
EHBP1 EH domain binding protein 1	(D) DE 4	6	NC			(I) VT ³⁵⁶	
FAM49B family with sequence similarity 49, member B	(I) AP2	6	0.0188	(D) Mouse Blood ³⁵⁸			
HPCAL1 hippocalcin-like 1	(I) DE2	6	7.50E-05			(D) Mouse VT ³⁵⁶	
MAPK9 mitogen-activated protein kinase 9	(I) DE2	6	0.0132			(D) Mouse VT ³⁵⁶	
NEAT1 nuclear	(I) DE2	6	2.33E-24			(D) Mouse	

paraspeckle assembly transcript 1 (non-protein coding)						VT³⁵⁶	
RASL11B RAS-like, family 11, member B	(I) AP2	6	0.0124			(D) Mouse Caudate putamen³⁵⁶	
TRAK2 trafficking protein, kinesin binding 2	(D) DE2	6	0.006	(I) Mouse Blood³⁵⁸	(I) Mouse PFC³⁶⁰		
ADRBK1 adrenergic, beta, receptor kinase 1	(D) DE1	5	2.22E-05			(I) Mouse PFC³⁶¹	
BRAF v-raf murine sarcoma viral oncogene homolog B	(I) DE1	5	6.07E-29				Vemurafenib Dabrafenib
CAMK2B calcium/calmodulin-dependent protein kinase II beta	(I) DE1	5	0.00025			(D) Mouse striatum³⁶²	
CNP 2',3'-cyclic nucleotide 3' phosphodiesterase	(D) AP1	5	0.0315	(I) Mouse Hippocampus³⁵⁸		(I) Mouse AMY³⁵⁶	
CTTN cortactin	(I) DE1	5	3.46E-18	(D) Mouse Blood³⁵⁸		(D) Mouse VT³⁵⁶	
G2E3 G2/M-phase specific E3 ubiquitin protein ligase	(D) AP1	5	0.0214	(I) Mouse Hippocampus³⁵⁸			
GABARPL1 GABA(A) receptor-associated protein like 1	(I) DE1	5	3.48E-28	(D) Mouse Blood³⁵⁸			
HELZ helicase with zinc finger	(I) DE1	5	3.56E-06	(D) Mouse Blood³⁵⁸			
IL1B interleukin 1, beta	(I) DE1	5	0.0338	(D) Mouse Blood³⁵⁸			canakinumab gevokizumab gallium nitrate
LHFP lipoma HMGIC fusion partner	(I) DE1	5	1.27E-06	(D) Mouse Blood³⁵⁸			

LPAR1 lysophosphatidic acid receptor 1	(D) AP1	5	7.67E-06	(I) Mouse Hippocampus, Blood ³⁵⁸		(I) Mouse AMY ³⁵⁶	
MBP myelin basic protein	(D) AP1	5	6.74E-10	(I) Mouse Blood ³⁵⁸	(I) Oligodendrocytes ³⁶³ Mouse Brain ³⁶⁰	(I) Mouse AMY and Blood ³⁵⁶	
MEF2C myocyte enhancer factor 2C	(D) DE1	5	3.47E-09			(I) Mouse Hippocampus and VT ³⁵⁶	
NDRG1 N-myc downstream regulated 1	(I) DE1	5	3.21E-22	(D) Mouse Blood ³⁵⁸			
OGFR opioid growth factor receptor	(D) DE1	5	0.00053				enkephalin methionine
PCDH9 protocadherin 9	(D) AP1	5	0.0215			(I) Mouse VT ³⁵⁶	
PHF20L1 PHD finger protein 20-like 1	(I) DE1	5	7.97E-05	(D) Mouse Blood ³⁵⁸		(D) Mouse Hippocampus ³⁵⁶	
PRKCB protein kinase C, beta	(D) DE1 AP1	5	3.15E-09		(I) Mouse PFC ³⁶⁰ AMY ³⁶⁴		
RBMX RNA binding motif protein, X-linked	(D) DE1	5	1.40E-13	(I) Mouse NAC, Blood ³⁵⁸			
RNASEL ribonuclease L (2',5'-oligoisoadenylyl triphosphate synthetase-dependent)	(D) AP1	5	6.05E-06	(I) Mouse Blood ³⁵⁸			
SNAP23 synaptosomal-associated protein, 23kDa	(D) AP1	5	0.00039			(I) Mouse Blood ³⁵⁶	
TM4SF1 transmembrane 4 L six family member 1	(I) DE1	5	6.12E-11	(D) Mouse Blood ³⁵⁸			
TSPAN33 tetraspanin 33	(D) AP1	5	0.00302	(I) Mouse Blood ³⁵⁸		(I) Mouse VT ³⁵⁶	
VMP1 vacuole membrane protein 1	(I) DE1	5	0.00291	(D) Mouse Blood ³⁵⁸			

ZFP36 ZFP36 ring finger protein	(I) DE1	5	8.72E-27	(D) Mouse Blood ³⁵⁸	(D) Rat Brain ³⁶⁵		
BTBD3 BTB (POZ) domain containing 3	(I) DE 4	4	NC	(D) Mouse AMY ³⁵⁸			
CADM1 cell adhesion molecule 1	(I) DE4	4	NC			(D) Mouse VT ³⁵⁶	
CTBS chitobiase, di-N-acetyl-	(I) DE 4	4	NC			(D) VT ³⁵⁶	
LAMB1 laminin, beta 1	(I) AP4	4	NC	(D) Mouse HIP ³⁵⁸			
PLEC plectin	(D) DE 4	4	NC			(I) Mouse VT ³⁵⁶	
RAD23A RAD23 homolog A (<i>S. cerevisiae</i>)	(D) DE 4	4	NC	(I) Mouse Blood ³⁵⁸			
SETD8 SET domain containing (lysine methyltransferase) 8	(D) DE 4	4	NC	(I) Mouse Blood ³⁵⁸			
TXNRD2 thioredoxin reductase 2	(D) AP4	4	0.0425			(I) Mouse Blood ³⁵⁶	

Table S5 Biomarker discovery within each diagnostic group. Within-participant design. N=37 for all, N= 15 for BP, N=7 for MDD, N= 6 for SZA, and N=4 for SZ

	Top Biomarkers Discovered, Prioritized and Validated by Diagnosis				
Gene Symbol/ Affymetrix Probeset ID	Top Biomarkers All diagnoses	Top Biomarkers Bipolar disorder (BP)	Top Biomarkers Depression (MDD)	Top Biomarkers Schizoaffective disorder (SZA)	Top Biomarkers Schizophrenia (SZ)
Top Discovery AP Increased	DTNA 211493_x_at	DTNA 211493_x_at	PHF20 210500_at	USP48 232621_at	RP11-389C8.2 1556314_a_at
Top Discovery AP Decreased	KIF2C 211519_s_at	HS3ST3B1 1561908_a_at	EIF1B-AS1 1557212_at	NPRL3 210672_s_at	CYB561 210816_s_at
Top Discovery DE Increased	CADM1 237259_at	CADM1 237259_at	TLN1 232763_at	TSPYL1, 1560648_s_at	LOC100128288 1559045_at
Top Discovery DE Decreased	CLIP4 219944_at	Unknown 231262_at	NUCKS1 222027_at	TMSB15B, 1556964_s_at MCM8, 231827_at	CCDC163P 1559003_a_at
Top Prioritization AP Increased	SLC4A4 210739_x_at	KSR1 213769_at	DLK1 209560_s_at	IL6 205207_at	C1orf61 205103_at
Top Prioritization AP Decreased	SKA2 225686_at	CD44 216056_at	BBIP1 232910_at	TNS1 218863_s_at	SKA2 225686_at
Top Prioritization DE Increased	SAT1 210592_s_at	DAPP1 219290_x_at	BDNF 239367_at	TNF 207113_s_at	BDNF 206382_s_at
Top Prioritization DE Decreased	SKA2 225686_at	OPRM1 207989_at	SKA2 225686_at	S100B 1561521_at	HTR2A 211616_s_at
Top Validation AP Increased	IL6 205207_at	SPTBN1 215918_s_at	IL10 207433_at	JUN 201466_s_at	SLC5A3 1553313_s_at
Top Validation AP Decreased	MBP 225408_at	AKT1S1 224982_at	EIF1B-AS1 1557212_at	BATF2 228439_at	ATP6VOE1 236527_at
Top Validation DE Increased	JUN 201464_x_at	SAT1 213988_s_at	GATM 1566861_at	JUN 201464_x_at	JUN 201464_x_at
Top Validation DE Decreased	KLHDC3 214383_x_at	C20orf27 218081_at	PRPF40A 226687_at	ANXA11 228727_at	LOC100131662 236973_at

Table S6 Biological Pathways and Diseases. Suicidal ideation markers non-validated for behavior in completers (n=208) vs. suicidal ideation markers that were validated for behavior in completers (n=204).

A.		Ingenuity Pathways			KEGG Pathways			GeneGO Pathways		
		Top Canonical Pathways	P-Value	Ratio	Pathway Name	Enrichment Score	Enrichment p-value	Process Networks	Ratio	p-value
Non-Validated in Completers Stepwise (n=208 genes)	1	G-Protein Coupled Receptor Signaling	2.28E-08	5.7% 15/264	Pathogenic Escherichia coli infection	7.19808	0.000748	Cytoskeleton_ Regulation of cytoskeleton rearrangement	16/183	5.75E-07
	2	cAMP-mediated signaling	1.51E-07	5.8% 13/223	Amoebiasis	5.51218	0.004037	Development_ Neurogenesis_ Axonal guidance	17/230	2.65E-06
	3	CREB Signaling in Neurons	6.20E-06	5.6% 10/179	Dorso-ventral axis formation	4.7856	0.008349	Development_ Hedgehog signaling	17/254	1.01E-05
	4	Cardiac Hypertrophy Signaling	1.02E-05	4.7% 11/232	Melanogenesis	4.31121	0.013417	Reproduction_ Progesterone signaling	14/214	8.25E-05
	5	Synaptic Long Term Potentiation	2.26E-05	6.3% 8/127	Influenza A	4.23564	0.014471	Cardiac development_ Wnt_beta-catenin, Notch, VEGF, IP3 and integrin signaling	11/150	0.0001819
		Top Canonical Pathways	P-Value	Ratio	Pathway Name	Enrichment Score	Enrichment p-value	Process Networks	Ratio	p-value
Validated in Completers Stepwise (n=204 genes)	1	B Cell Receptor Signaling	1.01 E-08	7.2 % 13/181	Focal adhesion	10.5307	2.67E-05	Signal transduction_ WNT signaling	19/177	8.10E-10
	2	Ovarian Cancer Signaling	3.31 E-08	8.3 % 11/133	Colorectal cancer	10.3054	3.35E-05	Cell cycle_ G1-S Growth factor regulation	18/195	2.62E-08
	3	Glucocorticoid Receptor Signaling	3.97 E-08	5.3 % 15/281	GABAergic synapse	8.60276	0.000184	Reproduction_ Gonadotropin regulation	18/199	3.60E-08
	4	Colorectal Cancer Metastasis Signaling	4.00 E-08	5.8 % 14/241	mTOR signaling pathway	8.47678	0.000208	Reproduction_ GnRH signaling pathway	16/166	9.05E-08
	5	G12/13 Signaling	1.12	8.5 % 10/118	Chagas disease (American trypanosomiasis)	7.66796	0.000468	Neurophysiological process_ Transmission of nerve impulse	18/212	9.58E-08

			E-07								
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B.	Ingenuity			GeneGO		
	Diseases and Disorders	P-Value	# Molecules	Diseases	pValue	Ratio
Non- Validated in Completers Stepwise (n=208 genes)	1 Neurological disease	5.43E-04 - 8.63E-13	78	Psychiatry and Psychology	1.6E-30	85/1919
	2 Psychological Disorders	1.77E-04 - 2.04E-12	62	Mental Disorders	2.82E-30	78/1614
	3 Skeletal and Muscular Disorders	1.98E-04 - 5.33E-10	60	Schizophrenia	3.6E-22	51/914
	4 Organismal Injury and Abnormalities	6.69E-04 - 1.81E-09	184	Schizophrenia and Disorders with Psychotic Features	4.37E-22	51/918
	5 Cancer	6.32E-04 - 2.59E-09	182	Central Nervous System Diseases	5.41E-22	94/3069
	Diseases and Disorders	P-Value	# Molecules	Diseases	pValue	Ratio
Validated in Completers Stepwise (n=204 genes)	1 Organismal Injury and Abnormalities	2.11E-04 - 1.23E-13	178	Psychiatry and Psychology	1.77E-23	76/1919
	2 Cancer	2.20E-04 - 5.41E-13	176	Mental Disorders	1.23E-21	67/1614
	3 Neurological Disease	1.31E-04 - 1.07E-12	81	Mood Disorders	4.02E-21	47/797
	4 Psychological Disorders	1.31E-04 - 1.07E-12	63	Depressive Disorder, Major	1.06E-18	37/546
	5 Tumor Morphology	1.87E-04 - 1.83E-12	38	Depressive Disorder	2.44E-18	37/560

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