## **Supplementary Table 3.** List of DEGs in verbenalin-treated hAECs associated with AD

Ver. vs   Ver. vs   D7   D7   Control   Co	Gene Symbol	Gene Name	Fold C	nange
Genes up-regulated in brain from patients with Alzheimer's disease (n = 44)	-		Ver. vs	Ver. vs
Genes up-regulated in brain from patients with Alzheimer's disease (n = 44)   Group A gene list			D0	D7
TMEM8A			control	control
TMEM8A	_			
Tansmembrane Protein 8A	(	Genes up-regulated in brain from patients with Alzheimer's disease (n = 44)		
VEGFB		Group A gene list		
GOLGB1         Golgin B1         ns         -1.74           USF2         Upstream Transcription Factor 2, c-Fos Interacting         ns         -1.65           PDLIM4         PDZ And LIM Domain 4         -1.80         -1.56           TAF158         TAF15 RNA Polymerase II, TATA Box Binding Protein (TBP)-Associated Factor, 68kda         -3.93         -1.56           NR2F6         Nuclear Receptor Subfamily 2, Group F, Member 6         -2.93         -1.56           FAM3A*         Family with Sequence Similarity 3, Member A         -1.66         -1.47           C1S         Complement Component 1, S Subcomponent         3.98         -1.45           EGFR         Epidermal Growth Factor Receptor         -3.35         -1.41           SERTAD2         SERTA Domain Containing 2         1.42         -1.39           ARHGAP17*         Rho GTPase Activating Protein 17         -1.40         -1.38           MYO6         Myosin VI         ns         -1.37           MUC1         Mucin 1, Cell Surface Associated         3.35         -1.34           PAK4         P21 Protein CGc42/Rac)-Activated Kinase 4         -1.56         -1.34           TAO Kinase 2         1.04         -1.38         -1.47           GAPA1         IQ Motif Containing GTPase Activating Protein 1	TMEM8A*	Transmembrane Protein 8A	-4.46	-1.93
Upstream Transcription Factor 2, c-Fos Interacting	VEGFB	Vascular Endothelial Growth Factor B	ns	-1.89
PDLIM4	GOLGB1	Golgin B1	ns	-1.74
TAF15   TAF15 RNA Polymerase II, TATA Box Binding Protein (TBP)-Associated Factor, 68kda   -3.93   -1.56   Factor, 68kda   Nuclear Receptor Subfamily 2, Group F, Member 6   -2.93   -1.54   FAM3A*   Family with Sequence Similarity 3, Member A   -1.66   -1.47   C1S   Complement Component 1, S Subcomponent   3.98   -1.45   EGFR   Epidermal Growth Factor Receptor   -3.35   -1.41   SERTAD2   SERTA Domain Containing 2   1.42   -1.39   ARHGAP17*   Rho GTPase Activating Protein 17   -1.40   -1.38   MY06   Myosin VI   ms   -1.37   MY06   Myosin VI   ms   -1.37   MUC1   Mucin 1, Cell Surface Associated   3.33   -1.34   FAM44   P21 Protein (Cdc42/Rac)-Activated Kinase 4   -1.56   -1.34   TAOK2*   TAO Kinase 2   -1.44   -1.33   TAOK2*   TAO Kinase 2   -1.44   -1.33   TAOK2*   TAO Kinase 2   -1.44   -1.33   TAOM2*   IQ Motif Containing GTPase Activating Protein 1   -1.69   -1.31   GNA12   Guanine Nucleotide Binding Protein (G Protein) Alpha 12   -1.73   -1.30   IFNA5*   Interferon, Alpha 5   ms   -1.25   HDGF   Hepatoma-Derived Growth Factor   -1.67   -1.21   LAMP1   Lysosomal-Associated Protein 4   -3.75   -1.25   TUSA   -1.45   -1.18   SEMA4F   Sema Domain, Immunoglobulin Domain (Ig), Transmembrane Domain (TM)   1.28   -1.18   SEMA4F   Sema Domain, Immunoglobulin Domain (Ig), Transmembrane Domain (TM)   -1.28   -1.18   SEMA4F   Sema Domain, Immunoglobulin Domain (Ig), Transmembrane Domain (TM)   -1.28   -1.18   -1.17   -1.20   -1.21   -1.20   -1.21   -1.20   -1.21   -1.20   -1.21   -1.20   -1.21   -1.20   -1.21   -1.20   -1.21   -1.20   -1.21   -1.20   -1.21   -1.20   -1.21   -1.20   -1.21   -1.20   -1.21   -1.20   -1.21   -1.20   -1.21   -1.20   -1.21   -1.20   -1.21   -1.20   -1.21   -1.20   -1.21   -1.20   -1.21   -1.20   -1.21   -1.20   -1.21   -1.20   -1.21   -1.20   -1.21   -1.20   -1.21   -1.20   -1.21   -1.20   -1.21   -1.20   -1.21   -1.20   -1.20   -1.20   -1.20   -1.20   -1.20   -1.20   -1.20   -1.20   -1.20   -1.20   -1.20   -1.20   -1.20   -1.20   -1.20   -1.20   -1.20   -1.20   -1.20   -1.20   -1.20   -1.2	USF2		ns	-1.65
Factor, 68kda   Nuclear Receptor Subfamily 2, Group F, Member 6   -2.93   -1.54   FAM3A*   Family with Sequence Similarity 3, Member A   -1.66   -1.47   C1S   Complement Component 1, S Subcomponent   3.98   -1.45   EGFR   Epidermal Growth Factor Receptor   -3.35   -1.41   SERTAD2   SERTA Domain Containing 2   1.42   -1.39   ARHGAP17*   Rho GTPase Activating Protein 17   -1.40   -1.38   MYO6   Myosin VI   ns   -1.37   MUC1   Mucin 1, Cell Surface Associated   -1.35   -1.34   TAOK2*   TAO Kinase 2   -1.44   -1.33   TPD52*   Tumor Protein Cdc42/Rac)-Activated Kinase 4   -1.56   -1.34   TAOK2*   TAO Kinase 2   -1.44   -1.33   TPD52*   Tumor Protein D52   -2.42   -1.32   IGAP1   IQ Motif Containing GTPase Activating Protein 1   -1.69   -1.31   GNA12   Guanine Nucleotide Binding Protein GP Protein) Alpha 12   -1.73   -1.30   IFNA5*   Interferon, Alpha 5   ns   -1.25   MAP4   Microtuble-Associated Protein 4   -3.75   -1.25   MAP4   Microtuble-Associated Protein 4   -3.75   -1.25   LAMP1   Lysosomal-Associated Membrane Protein 1   1.19   -1.20   CUX1*   Cut-Like Homeobox 1   -1.45   -1.18   SEMA4F   Sema Domain, Immunoglobulin Domain (Ig), Transmembrane Domain (TM)   And Short Cytoplasmic Domain, (Semaphorin) 4F   SNED1   Sushi, Nidogen and EGF-Like Domains 1   ns   -1.17   TRPS1   Trichorhinophalangeal Syndrome 1   ns   -1.17   CPT2*   Carnitine Palmitoyl Transferase 2   ns   -1.15   GOLGA1   Golgin A1   ns   -1.18   NAP1L4   Nucleosome Assembly Protein 1-Like 4   -1.86   -1.12   PZP   Pregnancy-Zone Protein   -1.86   -1.12   DLG5   Discs, Large Homolog 5 (Drosophila)   ns   1.10   GOSR2   Golgi SNAP Receptor Complex Member 2   -1.82   1.14   DAZAP2   DAZ Associated Protein 2   seudogene 1; NOP2/Sun Domain   1.48   1.21   NSUNSP1;   NOP2/Sun Domain Family, Member 5 Pseudogene 1; NOP2/Sun Domain   1.48   1.21		PDZ And LIM Domain 4	-1.80	-1.59
NR2F6         Nuclear Receptor Subfamily 2, Group F, Member 6         -2.93         -1.54           FAM3A*         Family with Sequence Similarity 3, Member A         -1.66         -1.47           CIS         Complement Component 1, S Subcomponent         3.98         -1.45           EGFR         Epidermal Growth Factor Receptor         -3.35         -1.41           SERTAD2         SERTA Domain Containing 2         1.42         -1.39           ARHGAP17*         Rho GTPase Activating Protein 17         -1.40         -1.38           MYO6         Myosin VI         ns         -1.37           MUC1         Mucin 1, Cell Surface Associated         3.35         -1.34           PAK4         P21 Protein (Cdc42/Rac)-Activated Kinase 4         -1.56         -1.34           TAOK2*         TAO Kinase 2         -1.44         -1.33           IQGAP1         IQ Motif Containing GTPase Activating Protein 1         -1.69         -1.31           GNA12         Guanine Nucleotide Binding Protein (G Protein) Alpha 12         -1.73         -1.30           BFNA5*         Interferon, Alpha 5         ns         -1.25           MAP4         Microtubule-Associated Protein 4         -3.75         -1.25           LAMP1         Lysosomal-Associated Membrane Protein 1	TAF15§		-3.93	-1.56
FAMI3A*         Family with Sequence Similarity 3, Member A         -1.66         -1.47           C1S         Complement Component 1, S Subcomponent         3.98         -1.45           EGFR         Epidemal Growth Factor Receptor         -3.35         -1.41           SERTAD2         SERTA Domain Containing 2         1.42         -1.39           ARHGAP17*         Rho GTPase Activating Protein 17         -1.40         -1.38           MY06         Myosin VI         ns         -1.37           MUC1         Mucin 1, Cell Surface Associated         3.35         -1.34           PAK4         P21 Protein (Cdc42/Rac)-Activated Kinase 4         -1.56         -1.34           TAOK2*         TAO Kinase 2         -1.44         -1.33           TDGAP1         IQ Motif Containing GTPase Activating Protein 1         -1.69         -1.31           GNA12         Guanine Nucleotide Binding Protein (G Protein) Alpha 12         -1.73         -1.30           IFNA5*         Interferon, Alpha 5         ns         -1.25           MAP4         Microtubule-Associated Protein 4         -3.75         -1.25           HDGF         Hepatoma-Derived Growth Factor         -1.67         -1.21           LAMP1         Lysosomal-Associated Membrane Protein 1         1.19	NR2F6		-2.93	-1.54
CIS         Complement Component 1, S Subcomponent         3.98         -1.45           EGFR         Epidermal Growth Factor Receptor         -3.35         -1.41           SERTAD2         SERTA Domain Containing 2         1.42         -1.39           ARHGAP17*         Rho GTPase Activating Protein 17         -1.40         -1.38           MYO6         Myosin VI         ns         -1.37           MUC1         Mucin 1, Cell Surface Associated         3.35         -1.34           PAK4         P21 Protein (Cdc42/Rac)-Activated Kinase 4         -1.56         -1.34           TAOK2*         TAO Kinase 2         -1.44         -1.33           TPD52*         Tumor Protein D52         -2.42         -1.32           IQGAP1         IQ Motif Containing GTPase Activating Protein 1         -1.69         -1.31           IRSA5*         Interferon, Alpha 5         ns         -1.25           MAP4         Microtubule-Associated Protein 4         -3.75         -1.25           HDGF         Hepatoma-Derived Growth Factor         -1.67         -1.21           LAMP1         Lysosomal-Associated Membrane Protein 1         -1.19         -1.25           CUX1*         Cut-Like Homeobox 1         -1.45         -1.18           SEMA4F				
EGFR         Epidermal Growth Factor Receptor         -3.35         -1.41           SERTAD2         SERTA Domain Containing 2         1.42         -1.39           ARHGAP17*         Rho GTPase Activating Protein 17         -1.40         -1.38           MYO6         Myosin VI         ns         -1.37           MUC1         Mucin 1, Cell Surface Associated         3.35         -1.34           PAK4         P21 Protein (Cdc42/Rac)-Activated Kinase 4         -1.56         -1.34           TAOX2**         TAO Kinase 2         -1.44         -1.33           TPD52**         Turnor Protein D52         -2.42         -1.32           IQGAP1         IQ Motif Containing GTPase Activating Protein 1         -1.69         -1.31           GNA12         Guanine Nucleotide Binding Protein (G Protein) Alpha 12         -1.73         -1.30           IFNA5**         Interferon, Alpha 5         ns         -1.25           MAP4         Microtubule-Associated Protein 4         -3.75         -1.25           LAMP1         Lysosomal-Associated Membrane Protein 1         1.19         -1.20           CUX1§         Cut-Like Homeobox 1         -1.45         -1.18           SEMA4F         Sema Domain, Immunoglobulin Domain (Ig), Transmembrane Domain (TM)         ns <td< td=""><td>C1S</td><td></td><td>3.98</td><td>-1.45</td></td<>	C1S		3.98	-1.45
SERTAD2         SERTA Domain Containing 2         1.42         -1.39           ARHGAP17*         Rho GTPase Activating Protein 17         -1.40         -1.38           MYO6         Myosin VI         ns         -1.37           MUC1         Mucin 1, Cell Surface Associated         3.35         -1.34           PAK4         P21 Protein (Cdc42/Rac)-Activated Kinase 4         -1.56         -1.34           TAOK2*         TAO Kinase 2         -1.44         -1.33           TDD52*         Tumor Protein D52         -2.42         -1.32           IGAP1         IQ Motif Containing GTPase Activating Protein 1         -1.69         -1.31           GNA12         Guanine Nucleotide Binding Protein (G Protein) Alpha 12         -1.73         -1.30           IFNA5*         Interferon, Alpha 5         ns         -1.25           MAP4         Microtubule-Associated Protein 4         -3.75         -1.25           HDDGF         Hepatoma-Derived Growth Factor         -1.67         -1.21           LAMP1         Lysosomal-Associated Membrane Protein 1         1.19         -1.20           CUX1*         Cut-Like Homeobox 1         -1.45         -1.18           SEMA4F         Sema Domain, Immunoglobulin Domain (Ig), Transmembrane Domain (TM) And Short Cytoplasmic Domain, (Semapho				
ARHGAP17*         Rho GTPase Activating Protein 17         -1.40         -1.38           MYO6         Myosin VI         ns         -1.37           MUC1         Mucin I, Cell Surface Associated         3.35         -1.34           PAK4         P21 Protein (Cdc42/Rac)-Activated Kinase 4         -1.56         -1.34           TAOK2*         TAO Kinase 2         -1.44         -1.33           TPD52*         Tumor Protein D52         -2.42         -1.32           IQGAP1         IQ Motif Containing GTPase Activating Protein 1         -1.69         -1.31           GNA12         Guanine Nucleotide Binding Protein (G Protein) Alpha 12         -1.73         -1.30           IFNA5*         Interferon, Alpha 5         ns         -1.25           MAP4         Microtubule-Associated Protein 4         -3.75         -1.25           HDGF         Hepatoma-Derived Growth Factor         -1.67         -1.21           LAMP1         Lysosomal-Associated Membrane Protein 1         1.19         -1.20           CUX1*         Cut-Like Homeobox 1         -1.45         -1.18           SEMA4F         Sema Domain, Immunoglobulin Domain (Ig), Transmembrane Domain (TM)         1.28         -1.18           TRPS1         Trichorhinophalangeal Syndrome I         ns				
MYO6         Myosin VI         ns         -1.37           MUC1         Mucin 1, Cell Surface Associated         3.35         -1.34           PAK4         P21 Protein (Cdc42/Rac)-Activated Kinase 4         -1.56         -1.34           TAOK2*         TAO Kinase 2         -1.44         -1.33           TPD52*         Tumor Protein D52         -2.42         -1.32           IQGAP1         IQ Motif Containing GTPase Activating Protein 1         -1.69         -1.31           GNA12         Guanine Nucleotide Binding Protein (G Protein) Alpha 12         -1.73         -1.30           IFNA5*         Interferon, Alpha 5         ns         -1.25           MAP4         Microtubule-Associated Protein 4         -3.75         -1.25           HDGF         Hepatoma-Derived Growth Factor         -1.67         -1.21           LAMP1         Lysosomal-Associated Membrane Protein 1         1.19         -1.20           CUX1*         Cut-Like Homeobox 1         -1.45         -1.18           SEMA4F         Sema Domain, Immunoglobulin Domain (Ig), Transmembrane Domain (TM)         1.28         -1.18           SNED1         Sushi, Nidogen and EGF-Like Domains 1         ns         -1.17           TRPS1         Trichorhinophalangeal Syndrome I         ns         -1				
MUC1         Mucin 1, Cell Surface Associated         3.35         -1.34           PAK4         P21 Protein (Cdc42/Rac)-Activated Kinase 4         -1.56         -1.34           TAOK2*         TAO Kinase 2         -1.44         -1.33           TPD52*         Tumor Protein D52         -2.42         -1.32           IQGAP1         IQ Motif Containing GTPase Activating Protein 1         -1.69         -1.31           GNA12         Guanine Nucleotide Binding Protein (G Protein) Alpha 12         -1.73         -1.30           IFNA5*         Interferon, Alpha 5         ns         -1.25           MAP4         Microtubule-Associated Protein 4         -3.75         -1.25           HDGF         Hepatoma-Derived Growth Factor         -1.67         -1.21           LAMP1         Lysosomal-Associated Membrane Protein 1         1.19         -1.20           CUX1\$*         Cut-Like Homeobox 1         -1.45         -1.18           SEMA4F         Sema Domain, Immunoglobulin Domain (Ig), Transmembrane Domain (TM)         1.28         -1.18           SNED1         Sushi, Nidogen and EGF-Like Domains 1         ns         -1.17           TRPS3         Trichorhinophalangeal Syndrome 1         ns         -1.17           CPT2*         Carnitine Palmitoyl Transferase 2	MYO6		ns	
PAK4         P21 Protein (Cdc42/Rac)-Activated Kinase 4         -1.56         -1.34           TAOK2*         TAO Kinase 2         -1.44         -1.33           TPD52*         Tumor Protein D52         -2.42         -1.32           IQGAP1         IQ Motif Containing GTPase Activating Protein 1         -1.69         -1.31           GNA12         Guanine Nucleotide Binding Protein (G Protein) Alpha 12         -1.73         -1.30           IFNA5*         Interferon, Alpha 5         ns         -1.25           MAP4         Microtubule-Associated Protein 4         -3.75         -1.25           HDGF         Hepatoma-Derived Growth Factor         -1.67         -1.21           LAMP1         Lysosomal-Associated Membrane Protein 1         1.19         -1.20           CUX1*         Cut-Like Homeobox 1         -1.45         -1.18           SEMA4F         Sema Domain, Immunoglobulin Domain (Ig), Transmembrane Domain (TM)         1.28         -1.18           SNED1         Sushi, Nidogen and EGF-Like Domains 1         ns         -1.17           TRPS1         Trichorhinophalangeal Syndrome I         ns         -1.17           CPT2*         Carnitine Palmitoyl Transferase 2         ns         -1.15           GOLGA1         Golgin A1         ns		Mucin 1, Cell Surface Associated	3.35	
TAOK2*         TAO Kinase 2         -1.44         -1.33           TPD52*         Tumor Protein D52         -2.42         -1.32           IQGAP1         IQ Motif Containing GTPase Activating Protein 1         -1.69         -1.31           GNA12         Guanine Nucleotide Binding Protein (G Protein) Alpha 12         -1.73         -1.30           IFNA5*         Interferon, Alpha 5         ns         -1.25           MAP4         Microtubule-Associated Protein 4         -3.75         -1.25           HDGF         Hepatoma-Derived Growth Factor         -1.67         -1.21           LAMP1         Lysosomal-Associated Membrane Protein 1         1.19         -1.20           CUX1*         Cut-Like Homeobox 1         -1.45         -1.18           SEMA4F         Sema Domain, Immunoglobulin Domain (Ig), Transmembrane Domain (TM)         1.28         -1.18           SNED1         Sushi, Nidogen and EGF-Like Domains 1         ns         -1.17           TRPS1         Trichorhinophalangeal Syndrome I         ns         -1.17           CPT2*         Carnitine Palmitoyl Transferase 2         ns         -1.15           GOLGA1         Golgin A1         ns         -1.13           NAP1L4         Nucleosome Assembly Protein 1-Like 4         -1.86         -1.1		P21 Protein (Cdc42/Rac)-Activated Kinase 4		
IQGAP1         IQ Motif Containing GTPase Activating Protein 1         -1.69         -1.31           GNA12         Guanine Nucleotide Binding Protein (G Protein) Alpha 12         -1.73         -1.30           IFNA5*         Interferon, Alpha 5         ns         -1.25           MAP4         Microtubule-Associated Protein 4         -3.75         -1.25           HDGF         Hepatoma-Derived Growth Factor         -1.67         -1.21           LAMP1         Lysosomal-Associated Membrane Protein 1         1.19         -1.20           CUX1*         Cut-Like Homeobox 1         -1.45         -1.18           SEMA4F         Sema Domain, Immunoglobulin Domain (Ig), Transmembrane Domain (TM) And Short Cytoplasmic Domain, (Semaphorin) 4F         1.28         -1.18           SNED1         Sushi, Nidogen and EGF-Like Domains 1         ns         -1.17           TRPS1         Trichorhinophalangeal Syndrome I         ns         -1.17           CPT2*         Carnitine Palmitoyl Transferase 2         ns         -1.15           GOLGA1         Golgin A1         ns         -1.13           NAP1L4         Nucleosome Assembly Protein 1-Like 4         -1.86         -1.12           RPL28         Ribosomal Protein L28         -1.76         -1.11           PZP         Pregnan	TAOK2*		-1.44	
GNA12         Guanine Nucleotide Binding Protein (G Protein) Alpha 12         -1.73         -1.30           IFNA5*         Interferon, Alpha 5         ns         -1.25           MAP4         Microtubule-Associated Protein 4         -3.75         -1.25           HDGF         Hepatoma-Derived Growth Factor         -1.67         -1.21           LAMP1         Lysosomal-Associated Membrane Protein 1         1.19         -1.20           CUX1*         Cut-Like Homeobox 1         -1.45         -1.18           SEMA4F         Sema Domain, Immunoglobulin Domain (Ig), Transmembrane Domain (TM)         1.28         -1.18           SNED1         Sushi, Nidogen and EGF-Like Domains 1         ns         -1.17           TRPS1         Trichorhinophalangeal Syndrome I         ns         -1.17           CPT2*         Carnitine Palmitoyl Transferase 2         ns         -1.15           GOLGA1         Golgin A1         ns         -1.13           NAP1L4         Nucleosome Assembly Protein 1-Like 4         -1.86         -1.12           RPL28         Ribosomal Protein L28         -1.76         -1.11           PZP         Pregnancy-Zone Protein         1.44         -1.10           DLG5         Discs, Large Homolog 5 (Drosophila)         ns         1.16	TPD52*	Tumor Protein D52	-2.42	-1.32
IFNA5*         Interferon, Alpha 5         ns         -1.25           MAP4         Microtubule-Associated Protein 4         -3.75         -1.25           HDGF         Hepatoma-Derived Growth Factor         -1.67         -1.21           LAMP1         Lysosomal-Associated Membrane Protein 1         1.19         -1.20           CUX1\$         Cut-Like Homeobox 1         -1.45         -1.18           SEMA4F         Sema Domain, Immunoglobulin Domain (Ig), Transmembrane Domain (TM)         1.28         -1.18           SNED1         Sushi, Nidogen and EGF-Like Domains 1         ns         -1.17           TRPS1         Trichorhinophalangeal Syndrome I         ns         -1.17           CPT2*         Carnitine Palmitoyl Transferase 2         ns         -1.15           GOLGA1         Golgin A1         ns         -1.13           NAPIL4         Nucleosome Assembly Protein 1-Like 4         -1.86         -1.12           RPL28         Ribosomal Protein L28         -1.76         -1.11           PZP         Pregnancy-Zone Protein         1.44         -1.10           DLG5         Discs, Large Homolog 5 (Drosophila)         ns         1.10           GOSR2         Golgi SNAP Receptor Complex Member 2         -1.82         1.14	IQGAP1	IQ Motif Containing GTPase Activating Protein 1	-1.69	-1.31
MAP4         Microtubule-Associated Protein 4         -3.75         -1.25           HDGF         Hepatoma-Derived Growth Factor         -1.67         -1.21           LAMP1         Lysosomal-Associated Membrane Protein 1         1.19         -1.20           CUX1\$         Cut-Like Homeobox 1         -1.45         -1.18           SEMA4F         Sema Domain, Immunoglobulin Domain (Ig), Transmembrane Domain (TM) And Short Cytoplasmic Domain, (Semaphorin) 4F         1.28         -1.18           SNED1         Sushi, Nidogen and EGF-Like Domains 1         ns         -1.17           TRPS1         Trichorhinophalangeal Syndrome I         ns         -1.17           CPT2*         Carnitine Palmitoyl Transferase 2         ns         -1.15           GOLGA1         Golgin A1         ns         -1.13           NAPIL4         Nucleosome Assembly Protein 1-Like 4         -1.86         -1.12           RPL28         Ribosomal Protein L28         -1.76         -1.11           PZP         Pregnancy-Zone Protein         1.44         -1.10           DLG5         Discs, Large Homolog 5 (Drosophila)         ns         1.10           GOSR2         Golgi SNAP Receptor Complex Member 2         -1.82         1.14           DAZAP2         DAZ Associated Protein 2         ns	GNA12	Guanine Nucleotide Binding Protein (G Protein) Alpha 12	-1.73	-1.30
HDGF         Hepatoma-Derived Growth Factor         -1.67         -1.21           LAMP1         Lysosomal-Associated Membrane Protein 1         1.19         -1.20           CUX1§         Cut-Like Homeobox 1         -1.45         -1.18           SEMA4F         Sema Domain, Immunoglobulin Domain (Ig), Transmembrane Domain (TM)         1.28         -1.18           SNED1         Sushi, Nidogen and EGF-Like Domains 1         ns         -1.17           TRPS1         Trichorhinophalangeal Syndrome I         ns         -1.17           CPT2*         Carnitine Palmitoyl Transferase 2         ns         -1.15           GOLGA1         Golgin A1         ns         -1.13           NAP1L4         Nucleosome Assembly Protein 1-Like 4         -1.86         -1.12           RPL28         Ribosomal Protein L28         -1.76         -1.11           PZP         Pregnancy-Zone Protein         1.44         -1.10           DLG5         Discs, Large Homolog 5 (Drosophila)         ns         1.10           GOSR2         Golgi SNAP Receptor Complex Member 2         -1.82         1.14           DAZAP2         DAZ Associated Protein 2         ns         1.16           TCF7L1         Transcription Factor 7-Like 1 (T-Cell Specific, HMG-Box)         1.35         1.17	IFNA5*	Interferon, Alpha 5	ns	-1.25
LAMP1         Lysosomal-Associated Membrane Protein 1         1.19         -1.20           CUX1§         Cut-Like Homeobox 1         -1.45         -1.18           SEMA4F         Sema Domain, Immunoglobulin Domain (Ig), Transmembrane Domain (TM)         1.28         -1.18           SEMA4F         Sema Domain, Immunoglobulin Domain (Ig), Transmembrane Domain (TM)         1.28         -1.18           And Short Cytoplasmic Domain, (Semaphorin) 4F	MAP4	Microtubule-Associated Protein 4	-3.75	-1.25
CUX1 <sup>§</sup> Cut-Like Homeobox 1         -1.45         -1.18           SEMA4F         Sema Domain, Immunoglobulin Domain (Ig), Transmembrane Domain (TM)         1.28         -1.18           SNED1         Sushi, Nidogen and EGF-Like Domains 1         ns         -1.17           TRPS1         Trichorhinophalangeal Syndrome I         ns         -1.17           CPT2*         Carnitine Palmitoyl Transferase 2         ns         -1.15           GOLGA1         Golgin A1         ns         -1.13           NAP1L4         Nucleosome Assembly Protein 1-Like 4         -1.86         -1.12           RPL28         Ribosomal Protein L28         -1.76         -1.11           PZP         Pregnancy-Zone Protein         1.44         -1.10           DLG5         Discs, Large Homolog 5 (Drosophila)         ns         1.10           GOSR2         Golgi SNAP Receptor Complex Member 2         -1.82         1.14           DAZAP2         DAZ Associated Protein 2         ns         1.16           TCF7L1         Transcription Factor 7-Like 1 (T-Cell Specific, HMG-Box)         1.35         1.17           NSUN5P1;         NOP2/Sun Domain Family, Member 5 Pseudogene 1; NOP2/Sun Domain         1.48         1.21           NSUN5P2         Family, Member 5 Pseudogene 2 <td< td=""><td>HDGF</td><td>Hepatoma-Derived Growth Factor</td><td>-1.67</td><td>-1.21</td></td<>	HDGF	Hepatoma-Derived Growth Factor	-1.67	-1.21
SEMA4FSema Domain, Immunoglobulin Domain (Ig), Transmembrane Domain (TM) And Short Cytoplasmic Domain, (Semaphorin) 4F1.28-1.18SNED1Sushi, Nidogen and EGF-Like Domains 1ns-1.17TRPS1Trichorhinophalangeal Syndrome Ins-1.17CPT2*Carnitine Palmitoyl Transferase 2ns-1.15GOLGA1Golgin A1ns-1.18NAP1L4Nucleosome Assembly Protein 1-Like 4-1.86-1.12RPL28Ribosomal Protein L28-1.76-1.11PZPPregnancy-Zone Protein1.44-1.10DLG5Discs, Large Homolog 5 (Drosophila)ns1.10GOSR2Golgi SNAP Receptor Complex Member 2-1.821.14DAZAP2DAZ Associated Protein 2ns1.16TCF7L1Transcription Factor 7-Like 1 (T-Cell Specific, HMG-Box)1.351.17NSUN5P1; NSUN5P1; NOP2/Sun Domain Family, Member 5 Pseudogene 1; NOP2/Sun Domain1.481.21NSUN5P2Family, Member 5 Pseudogene 2		Lysosomal-Associated Membrane Protein 1	1.19	-1.20
And Short Cytoplasmic Domain, (Semaphorin) 4F  SNED1 Sushi, Nidogen and EGF-Like Domains 1 ns -1.17  TRPS1 Trichorhinophalangeal Syndrome I ns -1.17  CPT2* Carnitine Palmitoyl Transferase 2 ns -1.15  GOLGA1 Golgin A1 ns -1.13  NAP1L4 Nucleosome Assembly Protein 1-Like 4 -1.86 -1.12  RPL28 Ribosomal Protein L28 -1.76 -1.11  PZP Pregnancy-Zone Protein 1.44 -1.10  DLG5 Discs, Large Homolog 5 (Drosophila) ns 1.10  GOSR2 Golgi SNAP Receptor Complex Member 2 -1.82 1.14  DAZAP2 DAZ Associated Protein 2 ns 1.16  TCF7L1 Transcription Factor 7-Like 1 (T-Cell Specific, HMG-Box) 1.35 1.17  NSUN5P1; NOP2/Sun Domain Family, Member 5 Pseudogene 1; NOP2/Sun Domain 1.48 1.21  NSUN5P2 Family, Member 5 Pseudogene 2	CUX1§		-1.45	
TRPS1Trichorhinophalangeal Syndrome Ins-1.17CPT2*Carnitine Palmitoyl Transferase 2ns-1.15GOLGA1Golgin A1ns-1.13NAP1L4Nucleosome Assembly Protein 1-Like 4-1.86-1.12RPL28Ribosomal Protein L28-1.76-1.11PZPPregnancy-Zone Protein1.44-1.10DLG5Discs, Large Homolog 5 (Drosophila)ns1.10GOSR2Golgi SNAP Receptor Complex Member 2-1.821.14DAZAP2DAZ Associated Protein 2ns1.16TCF7L1Transcription Factor 7-Like 1 (T-Cell Specific, HMG-Box)1.351.17NSUN5P1; NSUN5P1; NSUN5P2NOP2/Sun Domain Family, Member 5 Pseudogene 1; NOP2/Sun Domain Family, Member 5 Pseudogene 21.481.21	SEMA4F		1.28	-1.18
CPT2*         Carnitine Palmitoyl Transferase 2         ns         -1.15           GOLGA1         Golgin A1         ns         -1.13           NAP1L4         Nucleosome Assembly Protein 1-Like 4         -1.86         -1.12           RPL28         Ribosomal Protein L28         -1.76         -1.11           PZP         Pregnancy-Zone Protein         1.44         -1.10           DLG5         Discs, Large Homolog 5 (Drosophila)         ns         1.10           GOSR2         Golgi SNAP Receptor Complex Member 2         -1.82         1.14           DAZAP2         DAZ Associated Protein 2         ns         1.16           TCF7L1         Transcription Factor 7-Like 1 (T-Cell Specific, HMG-Box)         1.35         1.17           NSUN5P1;         NOP2/Sun Domain Family, Member 5 Pseudogene 1; NOP2/Sun Domain         1.48         1.21           NSUN5P2         Family, Member 5 Pseudogene 2	SNED1		ns	-1.17
GOLGA1         Golgin A1         ns         -1.13           NAP1L4         Nucleosome Assembly Protein 1-Like 4         -1.86         -1.12           RPL28         Ribosomal Protein L28         -1.76         -1.11           PZP         Pregnancy-Zone Protein         1.44         -1.10           DLG5         Discs, Large Homolog 5 (Drosophila)         ns         1.10           GOSR2         Golgi SNAP Receptor Complex Member 2         -1.82         1.14           DAZAP2         DAZ Associated Protein 2         ns         1.16           TCF7L1         Transcription Factor 7-Like 1 (T-Cell Specific, HMG-Box)         1.35         1.17           NSUN5P1;         NOP2/Sun Domain Family, Member 5 Pseudogene 1; NOP2/Sun Domain         1.48         1.21           NSUN5P2         Family, Member 5 Pseudogene 2	TRPS1	Trichorhinophalangeal Syndrome I	ns	-1.17
NAP1L4Nucleosome Assembly Protein 1-Like 4-1.86-1.12RPL28Ribosomal Protein L28-1.76-1.11PZPPregnancy-Zone Protein1.44-1.10DLG5Discs, Large Homolog 5 (Drosophila)ns1.10GOSR2Golgi SNAP Receptor Complex Member 2-1.821.14DAZAP2DAZ Associated Protein 2ns1.16TCF7L1Transcription Factor 7-Like 1 (T-Cell Specific, HMG-Box)1.351.17NSUN5P1;NOP2/Sun Domain Family, Member 5 Pseudogene 1; NOP2/Sun Domain1.481.21NSUN5P2Family, Member 5 Pseudogene 2	CPT2*	Carnitine Palmitoyl Transferase 2	ns	-1.15
RPL28 Ribosomal Protein L28 -1.76 -1.11 PZP Pregnancy-Zone Protein 1.44 -1.10 DLG5 Discs, Large Homolog 5 (Drosophila) ns 1.10 GOSR2 Golgi SNAP Receptor Complex Member 2 -1.82 1.14 DAZAP2 DAZ Associated Protein 2 ns 1.16 TCF7L1 Transcription Factor 7-Like 1 (T-Cell Specific, HMG-Box) 1.35 1.17 NSUN5P1; NOP2/Sun Domain Family, Member 5 Pseudogene 1; NOP2/Sun Domain 1.48 1.21 NSUN5P2 Family, Member 5 Pseudogene 2	GOLGA1	Golgin A1	ns	-1.13
PZPPregnancy-Zone Protein1.44-1.10DLG5Discs, Large Homolog 5 (Drosophila)ns1.10GOSR2Golgi SNAP Receptor Complex Member 2-1.821.14DAZAP2DAZ Associated Protein 2ns1.16TCF7L1Transcription Factor 7-Like 1 (T-Cell Specific, HMG-Box)1.351.17NSUN5P1;NOP2/Sun Domain Family, Member 5 Pseudogene 1; NOP2/Sun Domain1.481.21NSUN5P2Family, Member 5 Pseudogene 2	NAP1L4	Nucleosome Assembly Protein 1-Like 4	-1.86	-1.12
DLG5Discs, Large Homolog 5 (Drosophila)ns1.10GOSR2Golgi SNAP Receptor Complex Member 2-1.821.14DAZAP2DAZ Associated Protein 2ns1.16TCF7L1Transcription Factor 7-Like 1 (T-Cell Specific, HMG-Box)1.351.17NSUN5P1;NOP2/Sun Domain Family, Member 5 Pseudogene 1; NOP2/Sun Domain1.481.21NSUN5P2Family, Member 5 Pseudogene 2	RPL28	Ribosomal Protein L28	-1.76	-1.11
GOSR2Golgi SNAP Receptor Complex Member 2-1.821.14DAZAP2DAZ Associated Protein 2ns1.16TCF7L1Transcription Factor 7-Like 1 (T-Cell Specific, HMG-Box)1.351.17NSUN5P1; NSUN5P2NOP2/Sun Domain Family, Member 5 Pseudogene 1; NOP2/Sun Domain Family, Member 5 Pseudogene 21.481.21		Pregnancy-Zone Protein	1.44	-1.10
DAZAP2DAZ Associated Protein 2ns1.16TCF7L1Transcription Factor 7-Like 1 (T-Cell Specific, HMG-Box)1.351.17NSUN5P1;NOP2/Sun Domain Family, Member 5 Pseudogene 1; NOP2/Sun Domain1.481.21NSUN5P2Family, Member 5 Pseudogene 2			ns	1.10
TCF7L1Transcription Factor 7-Like 1 (T-Cell Specific, HMG-Box)1.351.17NSUN5P1;NOP2/Sun Domain Family, Member 5 Pseudogene 1; NOP2/Sun Domain1.481.21NSUN5P2Family, Member 5 Pseudogene 2	GOSR2	Golgi SNAP Receptor Complex Member 2	-1.82	1.14
NSUN5P1; NOP2/Sun Domain Family, Member 5 Pseudogene 1; NOP2/Sun Domain 1.48 1.21   NSUN5P2 Family, Member 5 Pseudogene 2				1.16
NSUN5P2 Family, Member 5 Pseudogene 2			1.35	1.17
			1.48	1.21
			1.14	1.24

ABL1	C-ABL Oncogene 1, Non-Receptor Tyrosine Kinase	-2.17	1.25	
DMC1	DNA Meiotic Recombinase 1	-1.07	1.27	
TAF11	TAF11 RNA Polymerase II, TATA Box Binding Protein (TBP)-Associated	-1.42	1.33	
	Factor, 28kda			
IFIT5	Interferon-Induced Protein with Tetratricopeptide Repeats 5	2.40	1.35	
PTTG1IP	Pituitary Tumor-Transforming 1 Interacting Protein	ns	1.40	
Ge	enes down-regulated in brain from patients with Alzheimer's disease (n = 29)			
DEC10 <sup>†</sup>	Group B gene list	2.77	2.01	
PEG10 <sup>‡</sup>	Paternally Expressed 10	2.77	-2.01	
FAM65B DYNC1H1 <sup>†,‡,</sup>	Family with Sequence Similarity 65, Member B	5.44	-1.93	
	Dynein, Cytoplasmic 1, Heavy Chain 1	ns	-1.89	
SMAP1 MEF2A <sup>§</sup>	Small ARFGAP 1	ns 1.71	-1.83	
	Myocyte Enhancer Factor 2a	1.71	-1.52	
SLC7A2	Solute Carrier Family 7, Member 2	ns	-1.52	
SERGEF ARPP19 <sup>†</sup>	Secretion Regulating Guanine Nucleotide Exchange Factor  CAMP-Regulated Phosphoprotein, 19kda	ns	-1.45 -1.40	
PEX19 <sup>†</sup>	Peroxisomal Biogenesis Factor 19	ns		
ZFR§	Zinc Finger RNA Binding Protein	ns 1 06	-1.35 -1.34	
OPA1§	Optic Atrophy 1 (Autosomal Dominant)	1.96	-1.34	
STK24 <sup>‡,⊥</sup>	Serine/Threonine Kinase 24	1.50	-1.33	
GNAS <sup>†,§,</sup>		-1.68	-1.27	
NDFIP1	GNAS Complex Locus Nedd4 Family Interacting Protein 1	-2.36	-1.27	
USO1 <sup>†</sup>	USO1 Vesicle Transport Factor	-1.19	-1.26	
YME1L1 <sup>†</sup>	YME1-Like 1 ATPase	1.56	-1.26	
LZTS1	Leucine Zipper, Putative Tumor Suppressor 1	1	-1.25	
NFYC	Nuclear Transcription Factor Y, Gamma	ns -1.81	-1.25	
GNB1 <sup>†,‡,§</sup>	Guanine Nucleotide Binding Protein (G Protein), Beta Polypeptide 1	-1.99	-1.19	
SYNCRIP	Synaptotagmin-binding, Cytoplasmic RNA Interacting Protein	1.69	-1.19	
DYNLRB1	Dynein, Light Chain, Roadblock-Type 1	-1.43	-1.19	
THY1 <sup>†,‡,</sup>	Thy-1 Cell Surface Antigen	-7.97	-1.14	
APC§	Adenomatous Polyposis Coli	ns	-1.13	
RCAN2 <sup>†,‡,⊥</sup>	Regulator of Calcineurin 2	1.50	-1.12	
SLC12A5 <sup>†</sup>	Solute Carrier Family 12 (Potassium/Chloride Transporter), Member 5	-1.36	-1.12	
IPO5	Importin 5	-2.30	1.37	
EEF1E1	Eukaryotic Translation Elongation Factor 1 Epsilon 1	-1.28	1.33	
SLC35A1	Solute Carrier Family 35 (CMP-Sialic Acid Transporter), Member A1	ns	1.20	
PMPCB	Peptidase (Mitochondrial Processing) Beta	2.1	1.19	
Interactions of Pathological Hallmark Proteins  Tubulin Polymerization Promoting Protein/P25, B-Amyloid, And A-Synuclein (n = 22)				
BDP1	B Double Prime 1, Subunit of RNA Polymerase III Transcription Initiation Factor IIIB	ns	-1.50	
PLEKHG6	Pleckstrin Homology Domain-containing, Family G (With RhoGEF Domain) Member 6	1.12	-1.38	
SAMD4A	Sterile Alpha Motif Domain Containing 4A	-1.69	-1.38	
CTCFL	CCCTC-Binding Factor (Zinc Finger Protein)-Like	1.25	-1.35	
SPECC1	Sperm Antigen with Calponin Homology and Coiled-Coil Domains 1	-1.96	-1.21	
RNASE1	Ribonuclease, RNAse A Family, 1 (Pancreatic)	ns	-1.17	
LIPC	Lipase, Hepatic	ns	-1.14	

PZP	Pregnancy-Zone Protein	1.44	-1.10	
DLG5	Discs, Large Homolog 5 (Drosophila)	ns	1.10	
STON2	Stonin 2	ns	1.11	
ADSS	Adenylosuccinate Synthase	1.12	1.13	
FOXD2	Forkhead Box D2	ns	1.13	
SPNS3	Spinster Homolog 3 (Drosophila)	1.69	1.13	
CCR2	Chemokine (C-C Motif) Receptor 2	1.40	1.14	
DOCK8	Dedicator of Cytokinesis 8	1.89	1.14	
PLEKHS1	Pleckstrin Homology Domain-containing, Family S Member 1	1.26	1.15	
ARHGAP11A	Rho GTPase Activating Protein 11A	-3.67	1.17	
TBXAS1	Thromboxane A Synthase 1 (Platelet)	1.67	1.18	
ANKAR	Ankyrin And Armadillo Repeat Containing	1.39	1.20	
SLC35A1	Solute Carrier Family 35 (CMP-Sialic Acid Transporter), Member A1	ns	1.20	
EDNRA	Endothelin Receptor Type A	1.14	1.24	
SS18	Synovial Sarcoma Translocation, Chromosome 18	-3.31	1.98	
Genes having Strong Association with Late-Onset of Alzheimer Disease (n = 11)				
ARHGAP19	Rho GTPase Activating Protein 19	ns	-1.11	
ARHGAP21	Rho GTPase Activating Protein 21	-1.82	-2.00	
CAMK2G	Calcium/Calmodulin-Dependent Protein Kinase II Gamma	-2.81	-2.07	
CUBN	Cubilin (Intrinsic Factor-Cobalamin Receptor)	1.46	-1.18	
FAM107B	Family with Sequence Similarity 107, Member B	-1.82	-1.35	
IFIT5	Interferon-Induced Protein with Tetratricopeptide Repeats 5	2.40	1.35	
ITIH5	Inter-Alpha-Trypsin Inhibitor Heavy Chain Family, Member 5	2.87	-1.30	
NHLRC2	NHL Repeat Containing 2	ns	-1.22	
RNLS	Renalase, FAD-Dependent Amine Oxidase	ns	-1.17	
WAPAL	Wings Apart-Like Homolog (Drosophila)	ns	-1.14	
YME1L1	YME1-Like 1 ATPase	1.56	-1.26	
Genes Associated with Neurodegeneration (n = 6)				
CLN3	Ceroid-Lipofuscinosis, Neuronal 3	1.67	1.24	
CTSD	Cathepsin D	1.26	-1.51	
DYNC1H1	Dynein, Cytoplasmic 1, Heavy Chain 1	ns	-1.89	
HSPB1	Heat Shock 27kda Protein 1	ns	-1.31	
OPA1	Optic Atrophy 1 (Autosomal Dominant)	ns	-1.33	
SBF2	SET Binding Factor 2	ns	-1.32	
*~	1 to control of the test of the control of AD			

<sup>\*</sup>Genes up-regulated in patients at the incipient stage of AD.

<sup>†</sup>Genes whose expression significantly and positively correlated with the density of CALB1-positive [GeneID=793] GABAergic interneurons in the BA9 brain region across all subjects with psychiatric disorders (n =10).

 $<sup>^{\</sup>ddagger}$ Genes whose expression significantly and positively correlated with oligodendrocyte density in layer VI of BA9 brain region (prefrontal cortex) in patients with bipolar disorder (n = 7).

 $<sup>\</sup>S$ Genes down-regulated in patients at the incipient stage of Alzheimer's disease (n = 6)

 $<sup>^{\</sup>perp}$ Genes whose expression was significantly and positively correlated with the number of perineuronal oligodendrocytes in the layer III of BA9 brain region (n = 5).

<sup>§</sup>Genes up-regulated in peripheral lymphocytes from old individuals compared to those from young donors.