Additional file 5 – Table S4 – Details about selected DEGs within IPA networks.					
cExN or cIN, IS/AP shared or AP-specific	**Gene Name**	**Class**	**Network identified**	**Physiological role and function**	**References**
cExN – IS/AP shared	*CHL1*	Adhesion molecule	Behavior (Locomotion), Behavior and Developmental Disorder	Nervous system development and synaptic plasticity.	(1, 2)
	KCNC1	Ion channel	Behavior (Locomotion)	Potassium channel, loss associated with epilepsy and ID.	(3)
	SPP1	ECM protein	Behavior (Locomotion), Behavior and Developmental Disorder, Neurological Disease (Inflammation of Central Nervous System)	Neuroprotective, enhances NSC survival and proliferation.	(4, 5)
	TPH1	Enzyme	Behavior (Locomotion), Behavior and Developmental Disorder	Serotonin biosynthesis, mutated in schizophrenia and other neuropsychiatric disorders.	(6, 7)
	GAS7	PCH protein	Behavior and Developmental Disorder	Adaptor protein; regulate cytoskeleton/membrane dynamics. Involved in neurite outgrowth.	(8, 9)
	XYLT1	Xylosyl transferase	Behavior and Developmental Disorder	Involved in proteoglycan synthesis, which has a role in neuronal migration.	(10, 11)
	SPATA18	Mitochondria-eating protein	Behavior and Developmental Disorder	Mitochondrial response to oxidative stress.	(12)
	CHCHD2	Mitochondrial protein	Behavior and Developmental Disorder	Regulates metabolism and scavenging reactive oxygen species. Negative regulator of mitochondria-mediated apoptosis.	(13)
	VCAM1	Adhesion	Neurological Disease (Inflammation of Central Nervous System)	Maintains NSC identity and adult NSC niche.	(14, 15)
	ANXA1	Annexin	Neurological Disease (Inflammation of Central Nervous System)	Proliferation, differentiation, apoptosis. Anti-inflammatory. Recurrent duplications associated with ASD.	(16-18)
	SERPINE1	Serine proteinase inhibitor	Neurological Disease (Inflammation of Central Nervous System)	Part of MET signaling cascade, which has been associated with ASD. Role in brain not known. Upregulated in human	(19, 20)

				NSCs versus other brain tissue.	
	TLR4 and TLR2	Toll-like receptor	Neurological Disease (Inflammation of Central Nervous System) and Behavior (Locomotion)	Neuronal differentiation and survival.	(21, 22)
	IRAK1	Kinase – member of Toll/IL-1-receptor family	Neurological Disease (Inflammation of Central Nervous System)	Might contribute to neuroprotection.	(23)
cExN – AP-specific	*ERBB4*	EGF receptor tyrosine kinase	Behavior (Memory and Learning) and Nervous System Development and Function (Differentiation of Neurons)	Proliferation, differentiation, migration, and survival of neural cells.	(24, 25)
	FOXB1	Transcription factor	Behavior (Memory and Learning)	Expressed in neural tube, involved in anterior-posterior patterning and in neural development during embryogenesis	(26, 27)
	COMT	Catechol-O-methyltransferase	Behavior (Memory and Learning)	Breaks down dopamine to maintain normal physiological levels in the prefrontal cortex.	(28)
	SLC8A2	Sodium/ calcium exchanger	Behavior (Memory and Learning)	Involved in synaptic plasticity.	(29)
	EMX1	Transcription factor	Nervous System Development and Function (Differentiation of Neurons)	Central role in neural development.	(30)
cIN – IS/AP shared	*KCNJ3* and *KCNJ2*	Ion channels	Behavior (Behavior), Neurological	Behavior, mood disorder, and motor coordination.	(31-34)
	CACNA2D3	Ion channel	Behavior (Behavior), Neurological, Psychological Disorder (Anxiety Disorders)	Mood and cognition.	(35)
	SCN9A	Ion channel	Psychological Disorder (Anxiety Disorders and Depressive Disorder)	Excitability of sensory and cortical neurons.	(36)
	ADCYAP1	Neuropeptide	Behavior (Learning, Cognition, and Behavior), Nervous System Development and Function (Quantity of Neurons)	Regulation of psychomotor and sensory motor behavior and social interactions.	(37, 38)

	GRIK2, GRIK3	Receptors	Psychological Disorder (Mood Disorders), Behavior (Behavior), Neurological	Motor activity and habituation.	(31, 39, 40)
	SST	Calcium binding protein	Behavior (Learning, Cognition, and Behavior), Neurological	Mood disturbances.	(41)
	PCDH9 and *PCDHGA11*	Adhesion molecules	Behavior (Learning, Cognition, and Behavior), Nervous System Development and Function (Quantity of Synapse and Quantity of Neurons)	Learning, memory, behavior, neuronal migration, axonal growth, and synaptic function.	(42-46)
	SYT4	Transcription factor	Behavior (Learning and Cognition)	Synaptic transmission and mental retardation.	(47, 48)
cIN - AP-specific	*GRIA1 and GRIA2*	Receptors	Behavior (Behavior) and Nervous System Development and Function (Synaptic Transmission)	Synaptic structural and functional plasticity.	(49)
	GAP43	Gap junction	Nervous System Development and Function (Development of Neurons)	Stress and abnormal behavior.	(50)
	ARC	Cytoskeleton protein	Nervous System Development and Function (Synaptic Transmission), Behavior (Behavior and Cognition)	Synaptic plasticity and memory.	(51)
	MYT1L	Transcription factor	Nervous System Development and Function (Development of Neurons)	Brain development and intellectual disability.	(52, 53)
	CNTN1 and CNTN2	Adhesion molecules	Behavior (Behavior and Cognition), Nervous System Development (Development of Neurons)	Nervous system development.	(54)

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