

## Supplementary Table 1: Included Study Demographics

Text Summary: An inclusive overview of demographics and study content for all research studies included in the meta-analysis

Author (Year)	Gene	Allelic Variant	N (Male/Female) Mean Age	Ancestry	Study Design	Dosage (see footnotes)	Improvement Scale Analyzed	Additional Improvement Scales	Sub-outcomes Assessed	Result
Kim et al (2010)	SLC6A2	rs28386840 (A/T)	112 (92/20) 9.1	-	Observational; Single Arm; Open Label	Baseline: 19.9 mg/day Final 2 weeks: 29.2mg/day <sup>1</sup>	ARS-IV, CGI-I	-	Poor Response	T allele associated with improved response
Park et al (2012)	SLC6A2	rs28386840 (A/T)	53 (45/8) 9	Korean	Observational; Single Arm; Open Label	0.86mg/kg/day <sup>1</sup>	CPT	-	Poor Response	T allele associated with improved response
Hong et al (2012)	SLC6A2	rs28386840 (A/T)	103 (-/-) 9.1	Korean	Observational; Single Arm; Open Label	Baseline: 19.8 mg/day <sup>1</sup> At 8 weeks: 29.1mg/day <sup>3</sup>	ARS-IV, CGI-I	-	Poor Response	T allele associated with improved response
Yang et al (2004)	SLC6A2	rs5569 (G/A)	45 (35/10) 10.1	Han Chinese	Observational; Single Arm; Open Label	0.45-0.60mg/kg/day <sup>1</sup>	ARS-IV	-	Poor Response	G allele carriers associated with improved response
McGough et al (2009)	SLC6A2	rs5569 (G/A)	77(-/-) 9.8	Non-Hispanic white (51%), Hispanic white (24%), Black (13%), Asian (9%), Other (2%)	Randomized; Cross- Over; Double Blind	Patients weighing <25kg: one week each of 5mg,10mg,15mg three times daily. >25kg: additional week of 20mg three times daily	ARS-IV, SWAN	PERMP	Poor Response; Gene x Dose Interaction Side effects	No association
Kim et al (2010)	SLC6A2	rs5569 (G/A)	112 (92/20) 9.1	-	Observational; Single Arm; Open Label	Baseline: 19.9 mg/day Final 2 weeks: 29.2mg/day <sup>1</sup>	ARS-IV, CGI-I	-	Poor Response	No association
Song et al (2011)	SLC6A2	rs5569 (G/A)	114 (95/19) 9.1	Korean	Observational; Single Arm; Open Label	29.47mg/day <sup>2</sup> 37.8 mg/day <sup>3</sup>	ARS-IV, CGI-S	-	Poor Response	G/G associated with improved response
Lee et al (2011)	SLC6A2	rs5569 (G/A)	112 (93/19) 10.2	Korean	Observational; Single Arm; Open Label	0.85mg/kg/day <sup>3</sup>	K-ARS, CGI-I	CGI-S	Poor Response	No association
Hong et al (2012)	SLC6A2	rs5569 (G/A)	103 (-/-) 9.1	Korean	Observational; Single Arm; Open Label	Baseline: 19.8 mg/day <sup>1</sup> At 8 weeks: 29.1mg/day <sup>3</sup>	ARS-IV, CGI-I	-	Poor Response	G/G associated with improved response
Park et al (2012)	SLC6A2	rs5569 (G/A)	53 (45/8) 9	Korean	Observational; Single Arm; Open Label	0.86mg/kg/day <sup>1</sup>	CPT	-	Poor Response	G/G associated with improved response
Polanczyk et al (2007)	ADRA2A	rs1800544 (G/C)	106 (82/24) 10.3	European-Brazilian	Non-randomized; Quasi-experimental	Baseline: 0.5 mg/kg/day 1 month:	SNAP-IV	SNAP-IV Hyperactivity-	Poor Response; Response Rate	G allele associated with improved response

Dosage Strategy Descriptors: <sup>1</sup> Mean doses reported; <sup>2</sup> Fixed dose; <sup>3</sup> Mean at endpoint; <sup>4</sup> Mean of total duration average across groups; <sup>5</sup> Mean maximum dose; <sup>6</sup> Mean overall dose; <sup>7</sup> Final dose range. All studies reported use of MPH unless otherwise noted: \* Indicates use of OROS MPH, and, \*\* indicates use of MPH IR. SNAP-IV, Swanson, Nolan, and Pelham Scale – Version IV; CGI-I, Clinical Global Impression – Improvement; CBCL, Child Behaviour Checklist; WCST, Wisconsin Card Sorting Test; FW, Finger Windows; TOL, Tower of London test; SOPT, Self-Ordered Pointing Task; CPT, Conners’ Continuous Performance Test; RAST, Restricted Academic Situation Scale Task; DA, Delay Aversion; K-ARS, Korean version of ADHD Rating Scale; ARS-IV, ADHD Rating Scale – Version IV; PERMP, Permanent Product Measure of Performance; VADPRS, Vanderbilt ADHD Parent Rating Scales; VADTRS, Vanderbilt ADHD Teacher Rating Scales; SWAN, Strengths and Weaknesses of ADHD-Symptoms and Normal Behavior Scale; CGAS, Children Global Assessment Scale; CAT, Comprehensive Attention Test; SERS, Barkley Side Effect Rating Scale; K-SADS-PL, Kiddie-Schedule for Affective Disorders and Schizophrenia-Present and Lifetime Version; DISC, Diagnostic Interview Schedule for Children; SKAMP, Swanson, Conners, Milich, and Pelham Scale; CLAM, Conners, Loney, and Milich Scale; ICD-10, 10<sup>th</sup> revision of the International Statistical Classification of Diseases and Related Health Problems; CPRS-R:L, Conners’ Parent Rating Scale-revised: Long Version; MAGIC, Missouri Assessment for Genetics Interview for Children; CAPA, Child and Adolescent Psychiatric Assessment; ABRIS, Conners’ Abbreviated Rating Scale.

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						0.65mg/kg/day <sup>1</sup>		Impulsivity subscale Barkley SERS		
da Silva et al (2008)	ADRA2A	rs1800544 (G/C)	59 (45/14) 12.2	-	Observational; Single Arm; Open Label	0.63 mg/kg/day <sup>1</sup>	SNAP-IV, CGAS	-	Poor Response	G allele associated with improved response
Froehlich et al (2011)	ADRA2A	rs1800544 (G/C)	89 (65/24) 8.1	White (79%), Black (18%), Hispanic/Latino (2%), Other (1%)	Randomized; Cross- Over; Double Blind	1.57mg/kg/day <sup>5</sup>	VADPRS, VADTRS	-	Poor Response; Gene x Dose Interaction	G allele associated with poorer response
Kim et al (2013)	ADRA2A	rs1800544 (G/C)	101 (82/19) 8.7	-	Observational; Single Arm; Open Label	Baseline: 0.24mg/kg/day <sup>1</sup> 0.98mg/kg/day <sup>3</sup>	K-ARS, CAT	-	Poor Response	G allele carriers had more reduction in response time variability in flanker interference task
Cheon et al (2008)	COMT	rs4680 (G/A)	124 (106/18) 8.6	Korean	Observational; Single Arm; Open Label	25.81mg/day <sup>3</sup>	ARS-IV	-	Poor Response	Val/Val (G/G) associated with improved response (trend by parent, sig. by teacher scale)
Kereszturi et al (2008)	COMT	rs4680 (G/A)	122 (108/14) 9.6	-	Observational; Single Arm; Open Label	0.55mg/kg/day <sup>1</sup>	ARS-IV, CGI-S	-	Poor Response	Val (G) allele associated with improved response
McGough et al (2009)	COMT	rs4680 (G/A)	82 (63/19) 9.8	Non-Hispanic white (51%), Hispanic white (24%), Black (13%), Asian (9%), Other (2%)	Randomized; Cross- Over; Double Blind	Patients weighing <25kg: one week each of 5mg,10mg,15mg three times daily. >25kg: additional week of 20mg three times daily	ARS-IV, SWAN	PERMP	Poor Response; Gene x Dose Interaction Side Effects	Trend association of Val (G) with improved response
Salatino-Oliveira et al (2011)	COMT	rs4680 (G/A)	112 (112/0) 9.5	European-Brazilian	Observational; Single Arm; Open Label	Baseline: 0.5mg/kg/day 1 month: 0.65mg/kg/day <sup>1</sup>	SNAP-IV	-	Poor Response; Response Rate	Met (A) allele associated with improved response
Froehlich et al (2011)	COMT	rs4680 (G/A)	89 (65/24) 8.1	White (79%), Black (18%), Hispanic/Latino (2%), Other (1%)	Randomized; Cross- Over; Double Blind	1.57mg/kg/day <sup>4*</sup>	VADPRS, VADTRS	-	Poor Response; Gene x Dose Interaction	No significant association, but trend of Val/Val (G/G) with symptom improvement
Yatsuga et al (2014)	COMT	rs4680 (G/A)	50 (50/0) 9.7	-	Observational; Case Control	0.5-1.2mg/kg/day depending on age and weight	ARS-IV	-	Poor Response Side Effects	No association
Park et al (2014)	COMT	rs4680 (G/A)	120 (100/20) 8.9	-	Observational; Single Arm; Open Label	30.71mg <sup>3</sup>	ARS-IV	CPT CGI-I	Poor Response; Response Rate	Val/Val (G/G) associated with improved response
Choudhry et al (2012)	LPHN3	rs6551665 (G/A)	154 (-/-) 9	-	Randomized; Cross- Over; Double Blind	0.5mg/kg/day <sup>5</sup>	CGI-I	Conners' Parent, Conners' Teacher, CBCL WCST, FW, TOL, SOPT, CPT	Poor Response	G allele associated with improved response
Labbe et al (2012)	LPHN3	rs6551665 (G/A)	416 (319/97) 9	-	Randomized; Placebo-controlled; Cross-Over; Double Blind	0.5mg/kg/day <sup>2</sup>	RAST	DA, CPT, SOPT, FW	Poor Response	G allele associated with poorer response

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Song et al (2014)	LPHN3	rs6551665 (G/A)	137 (-/-) 10	-	Observational; Single Arm; Open Label	31mg/day <sup>5</sup>	CGI-I	K-ARS (ARS-IV)	Poor Response	No association
Bruxel et al (2015)	LPHN3	rs6551665 (G/A)	172 (132/40) 10.6	European-Brazilian, African-Brazilian	Observational	Baseline: 0.3mg/kg/day; 1 month:0.47mg/kg/day; After first month: 0.60 mg/kg/day <sup>7</sup>	SNAP-IV	-	Poor Response; Response Rate	G allele associated with improved response
Choudhry et al (2012)	LPHN3	rs1947274 (C/A)	154 (-/-) 9	-	Randomized; Cross-Over; Double Blind	0.5mg/kg/day <sup>2</sup>	CGI-I	Conners' Parent, Conners' Teacher, CBCL Neuropsychological battery: WCST, FW, TOL, SOPT, CPT	Poor Response	A allele associated with improved response
Labbe et al (2012)	LPHN3	rs1947274 (C/A)	416 (319/97) 9	-	Randomized; Placebo-controlled; Cross-Over; Double Blind	0.5mg/kg/day <sup>2</sup>	RAST	DA, CPT, SOPT, FW	Poor Response	A allele associated with poorer response
Song et al (2014)	LPHN3	rs1947274 (C/A)	139 (120/19) 10	-	Observational; Single Arm; Open Label	31mg/day <sup>3</sup>	CGI-I	K-ARS (ARS-IV)	Poor Response	No association
McGough et al (2006)	DRD4	4-repeat VNTR	52 (-/-) 4.3	White (59%), Black or African American (15%), Hispanic or Latino (25%), Other (1%)	Randomized; Cross-Over; Double Blind	1 week of each dose at 1.25, 2.5, 5, and 7.5 mg/day (Effect sizes reported for weight-adjusted means at 7.5-mg dose)	SKAMP, CLAM	-	Poor Response	4R/4R associated with improved response
Cheon et al (2007)	DRD4	4-repeat VNTR	83 (72/11) 8.4	Korean	Observational; Single Arm; Open Label	20.67mg/day <sup>1</sup>	ARS-IV	-	Poor Response	4R/4R associated with improved response
McGough et al (2009)	DRD4	4-repeat VNTR	81 (-/-) 9.8	Non-Hispanic white (51%), Hispanic white (24%), Black (13%), Asian (9%), Other (2%)	Randomized; Cross-Over; Double Blind	Patients weighing <25kg: one week each of 5mg,10mg,15mg three times daily. >25kg: additional week of 20mg three times daily	ARS-IV, SWAN	PERMP	Poor Response; Gene x Dose Interaction Side Effects	No association
Froehlich et al (2011)	DRD4	4-repeat VNTR	89 (65/24) 8.1	White (79%), Black (18%), Hispanic/Latino (2%), Other (1%)	Randomized; Cross-Over; Double Blind	1.57mg/kg/day <sup>5*</sup>	VADPRS, VADTRS	-	Poor Response; Gene x Dose Interaction	4R allele associated with improved response
Hong et al (2012)	DRD4	4-repeat VNTR	103 (-/-) 9.1	Korean	Observational; Single Arm; Open Label	Baseline: 19.8mg/day <sup>1</sup> At 8 weeks: 29.1mg/day <sup>3</sup>	ARS-IV, CGI-I	-	Poor Response	No association
Ji et al (2013)	DRD4	4-repeat VNTR	114 (90/24) 8.9	Korean	Observational; Single Arm; Open Label	Titration starting as 18mg/day and increase weekly in 9mg/day increments, maximum at 36mg/day*	CGI-I, CGI-S, K-ARS	-	Poor Response	No association
Seeger et al (2001)	DRD4	7-repeat VNTR	47 (-/-) 10	-	Observational; Case Control	0.6-0.8mg/kg/day	CGAS	-	Poor Response	No association

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Hamarman et al (2004)	DRD4	7-repeat VNTR	45 (35/10) 9.6	African-American (82%), Hispanic (18%)	Observational; Single Arm; Open Label	Dose advancement of 5mg at each session (3-14 days) until symptom normalization (max dose of 60mg)	Conners' Parent	-	Poor Response	7R allele associated with poorer response
McGough et al (2006)	DRD4	7-repeat VNTR	52 (-/-) 4.3	White (59%), Black or African American (15%), Hispanic or Latino (25%), Other (1%)	Randomized; Cross-Over; Double Blind	1 week each of 1.25, 2.5, 5, and 7.5 mg/day (Effect sizes reported for weight-adjusted means at 7.5-mg dose)	SKAMP, CLAM	-	Poor Response	7R allele associated with slightly poorer response
Tharoor et al (2008)	DRD4	7-repeat VNTR	159 (-/-) 12.8	-	Observational	-	MAGIC	-	Poor Response	No association
Kereszturi et al (2008)	DRD4	7-repeat VNTR	122 (108/14) 9.6	-	Observational; Single Arm; Open Label	0.55mg/kg/day <sup>1</sup>	ARS-IV, CGI-S	-	Poor Response	No association
Winsberg et al (1999)	SLC6A3	10-repeat VNTR	30 (-/-) 8.3	African American	Observational; Single Arm; Open Label	Maximum of 60mg/day, not to exceed 0.7mg/kg	ABRS	-	Poor Response	10R/10R associated with poorer response
Roman et al (2002)	SLC6A3	10-repeat VNTR	50 (50/0) -	-	Observational; Single Arm; Open Label	0.7mg/kg/day <sup>3</sup>	ABRS, CGAS	-	Poor Response	10R/10R associated with poorer response
Kirley et al (2003)	SLC6A3	10-repeat VNTR	119 (112/7) 11.9	Caucasian (Irish)	Observational	-	CPRS-R:L	Three-point scale	Poor Response	10R allele associated with improved response
Langley et al (2005)	SLC6A3	10-repeat VNTR	168 (-/-) 9	Caucasian (British)	Observational; Single Arm; Open Label	-	CGI-I	-	Poor Response	No association
Stein et al (2005)	SLC6A3	10-repeat VNTR	47 (33/14) 9	Caucasian (89%), African American (4%), Hispanic (2%), Other (4%)	Randomized; Cross-Over; Double Blind	Weekly titrations of 18mg, 36mg, and 54mg*	ARS-IV, CGI-S	-	Poor Response	10R allele carriers associated with improved response
Cheon et al (2005)	SLC6A3	10-repeat VNTR	11 (9/2) 9.8	Korean	Observational; Single Arm; Open Label	0.3-0.7mg/kg/day	ARS-IV	-	Poor Response	10R/10R associated with improved response
McGough et al (2006)	SLC6A3	10-repeat VNTR	55 (-/-) 4.3	White (59%), Black or African American (15%), Hispanic or Latino (25%), Other (1%)	Randomized; Cross-Over; Double Blind	1 week of each dose at 1.25, 2.5, 5, and 7.5 mg/day (Effect sizes reported for weight-adjusted means at 7.5-mg dose)	SKAMP, CLAM	-	Poor Response	No association
Gilbert et al (2006)	SLC6A3	10-repeat VNTR	16 (14/2) 12.3	Caucasian (75%), African American (25%)	Randomized; Cross-Over; Double Blind	~0.5mg/kg/day <sup>1</sup>	ARS-IV	-	Poor Response	10R/10R associated with poorer response
Joober et al (2007)	SLC6A3	10-repeat VNTR	151 (129/22) 8.9	-	Randomized; Cross-Over; Double Blind	0.5mg/kg/day <sup>2</sup>	Conners' Parent, Conners' Teacher	-	Poor Response	10R allele associated with improved response
Purper-Ouakil et al (2008)	SLC6A3	10-repeat VNTR	141 (124/17) 10.3	-	Observational; Single Arm; Open Label	31.16mg <sup>3*/**</sup>	CGI-S, ARS-IV	-	Poor Response	10R/10R associated with poorer response
Kereszturi et al (2008)	SLC6A3	10-repeat VNTR	122 (108/14) 9.6	Hungarian	Observational; Single Arm; Open Label	0.55mg/kg/day <sup>1</sup>	ARS-IV, CGI-S	-	Poor Response	No association
Tharoor et al (2008)	SLC6A3	10-repeat VNTR	159 (-/-) 12.8	-	Observational	-	MAGIC	-	Poor Response	10R/10R associated with poorer response
Bellgrove et al (2008)	SLC6A3	10-repeat VNTR	26 (22/4) 9.1	-	Observational; Single Arm; Open Label	0.59mg/kg/day <sup>1</sup>	Conners' Parent	Landmark Task (spatial bias)	Poor Response	No association
McGough et al (2009)	SLC6A3	10-repeat VNTR	79 (-/-) 9.8	Non-Hispanic white (51%), Hispanic white (24%), Black (13%), Asian (9%), Other (2%)	Randomized; Cross-Over; Double Blind	Patients weighing <25kg: one week each of 5mg, 10mg, 15mg three times daily. >25kg: additional week of 20mg three times daily	ARS-IV, SWAN	PERMP	Poor Response; Gene x Dose Interaction Side Effects	No association

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Froehlich et al (2011)	SLC6A3	10-repeat VNTR	89 (65/24) 8.1	White (79%), Black (18%), Hispanic/Latino (2%), Other (1%)	Randomized; Cross-Over; Double Blind	1.57mg/kg/day <sup>5*</sup>	VADPRS, VADTRS	-	Poor Response; Gene x Dose Interaction	10R allele associated with poorer response
Hong et al (2012)	SLC6A3	10-repeat VNTR	103 (-/-) 9.1	Korean	Observational; Single Arm; Open Label	Baseline: 19.8mg/day 8 weeks: 29.1mg/day <sup>1</sup>	ARS-IV, CGI-I	-	Poor Response	No association