

**Supplementary Table S1: Potential off-targets of CAG targeting shRNAs.**

Reagent	Gene name	Description	Length (nt)*	Off-target level**	Brain Expression#	Other tissues#
<b>A2</b>	<i>Ccdc177</i>	Coiled-coil domain containing 177	21	1	very low	very low
	<i>Maml1</i>	Mastermind like transcriptional coactivator 1	21	1	low	broad & low
	<i>Ppp1r3f</i>	Protein phosphatase 1 regulatory subunit 3F	21	1	medium	very low
	<i>Golga4</i>	Golgin A4	20	1	very low	broad & low
	<i>Soga3</i>	SOGA family member 3	20	1	very low	very low
	<i>Th</i>	Tyrosine hydroxylase	20	1	specific & high	very low
	<i>Mink1</i>	Misshapen like kinase 1	20	2	high	broad & high
<b>A4</b>	<i>Stc1</i>	Stanniocalcin 1	21	1	very low	specific & medium
	<i>A2230006KO3Rik</i>		20	1		
	<i>Pum1</i>	Pumilio RNA binding family member 1	20	1	medium	broad & medium
	<i>D6Etd527e</i>		20	2		
	<i>Mad111</i>	Mitotic arrest deficient 1 like 1	20	2	very low	broad and low
	<i>Tbl1x</i>	Transducin beta like 1 X-linked	20	2	very low	broad & low
	<i>Zfp853</i>	Zinc Finger Protein 853	20	2	low	broad & low
<b>A15</b>	<i>none</i>					
<b>AG4</b>	<i>Ccdc177</i>	Coiled-coil domain containing 177	20	2	very low	very low
	<i>Lrch3</i>	Leucine rich repeats and calponin homology domain containing 3	20	2	low	broad & low
	<i>Maml1</i>	Mastermind like transcriptional coactivator 1	20	2	low	broad & low
	<i>Ppp1r3f</i>	Protein phosphatase 1 regulatory subunit 3F	20	2	medium	very low
	<i>Stc1</i>	Stanniocalcin 1	20	2	very low	specific & medium
<b>A4(P10,11A)</b>	<i>Kmt2d</i>	Lysine methyltransferase 2D	20	2	low	broad & low

\* Number of matched nucleotides out of 21, with cut-off 19 and less.

\*\* According to Blast bit-score, with level 1 > 40, and level 2 between 34 to 40.

# Expression source : [www.gtexportal.org](http://www.gtexportal.org)