

**Supplemental Data**

**SOBP Is Mutated in Syndromic  
and Nonsyndromic Intellectual Disability and Is  
Highly Expressed in the Brain Limbic System**

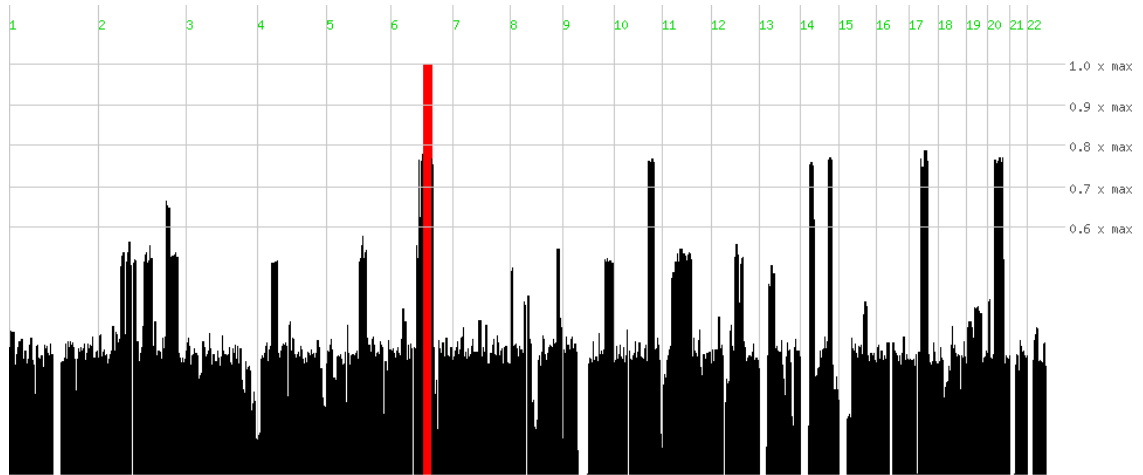
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**Table S1. Two-Point LOD Score**

Marker name	Recombination fraction						
	0.00	0.01	0.05	0.10	0.20	0.30	0.40
D6S1671	2.2614	2.6604	2.9151	2.7974	2.2442	1.4953	0.6168
D6S962	1.8575	1.8250	1.6929	1.5221	1.1595	0.7622	0.3294
D6S468	2.2614	2.1155	1.9584	1.7568	1.3340	0.8774	0.6168
D6S449	2.1543	2.1155	1.9584	1.7568	1.3340	0.8774	0.3829
D6S1709	4.4545	4.3735	4.0449	3.6230	2.7401	1.7947	0.7807
D6S1021	1.8575	1.8250	1.6929	1.5221	1.1595	0.7622	0.3294
D6S447	4.4545	4.3735	4.0449	3.6230	2.7401	1.7947	0.7807
D6S1592	4.4545	4.3735	4.0449	3.6230	2.7401	1.7947	0.7807
D6S268	1.8575	1.8250	1.6929	1.5221	1.1595	0.7622	0.3294
D6S1594	4.4545	4.3735	4.0449	3.6230	2.7401	1.7947	0.7807
D6S2431	4.2613	4.1833	3.8667	3.4600	2.6053	1.6818	0.6847

**Table S2. Primers Used to Amplify the *SOBP* Gene**

Primer Pair	Exon	Primer Sequence (5'→3')	
		Forward	Reverse
1	1	TCTCCGCACTATCCTTACCC	CGAGTTGGCCTCTGCTTAC
2	2	TGAACACCACACTAGGGGAAG	GGAAAGCACTATTGGGGATG
3	3	TTGGGTTCATGGCCATTTTA	TGATGCCTGTATTAACATTTCTTACC
4	4	CACTTCTTCTCCAAGGTCCAG	GCATGACACAAAAGGGGAAT
5	5	GGATTCCCGTTTGTGAATG	AAAAGATTGCAAACAATTTGAGA
6	6	TGCCTGTTTGAGAAGTGCTG	CATGATCTGCTGCTCCATGA
7	6b	TCTGACACTGCCAACTGCTC	GCGTTCGGAATGAAGTTCTC
8	6c	GTGCCCCAGATGATGAATTT	G TTCACGATGACGTTGCAG
9	6d	CAACGGGGAGAACTTCATTC	GTTTTGGCACAGGCTGGAT
10	6e	GACAAGTCAGACCCGAACCT	AGCTGCTGGCTCAGAATGTT



**Figure S1. Whole Genome Homozygosity Mapping Performed on Patients IV-1, IV-2, IV-4 and IV-7.**

Green numbers indicate chromosome number; a red spike depicts an area of homozygosity.

**Figure S2. Multiple Protein Sequence Alignment of SOBP Orthologs - Uniprot**  
**Mammalian Alignment**

<u>Chimp_SOBP</u>	MAEMEKEGRPPENKRSRKPAHPVKREINEEMKNFAENTMNELLGWYGDKVE LKDGEDIE	60	
<u>A7XYQ1</u>	MAEMEKEGRPPENKRSRKPAHPVKREINEEMKNFAENTMNELLGWYGDKVE LKDGEDIE	60	SOBP_HUMAN
<u>A7XYI9</u>	MAEMEKEGRPPENKRSRKPAHPVKREINEEMKNFAENTMNELLGWYGDKVE LKDGEDIE	60	A7XYI9_MACMU
<u>A7XYH9</u>	MAEMEKEGRPPENKRSRKPAHPVKREINEEMKNFAENTMNELLGWYGDKVE LKDGEDIE	60	SOBP_BOVIN
<u>Q0P5V2</u>	MAEMEKEGRPPENKRSRKPAHPVKREINEEMKNFAENTMNELLGWYGDKVE LKDGEDIE	60	SOBP_MOUSE
<u>A7XYI6</u>	MAEMEKEGRPPENKRSRKPAHPVKREINEEMKNFAENTMNELLGWYGDKVE LKDGEDIE	60	SOBP_RAT
*****			
<u>Chimp_SOBP</u>	FRSYPTDGGESRQHSVLKENSLPKPKLPEDSVISPYNI STGYSGLATGNGLSDS PAGESK	120	
<u>A7XYQ1</u>	FRSYPTDGGESRQHSVLKENSLPKPKLPEDSVISPYNI STGYSGLATGNGLSDS PAGESK	120	SOBP_HUMAN
<u>A7XYI9</u>	FRSYPTDGGESRQHSVLKENSLPKPKLPEDSVISPYNI STGYSGLATGNGLSDS PAGESK	120	A7XYI9_MACMU
<u>A7XYH9</u>	FRSYPTDGGESRQHSVLKENSLPKPKLPEDSVISPYNI STGYSGLATGNGLSDS PAGESK	120	SOBP_BOVIN
<u>Q0P5V2</u>	FRSYPTDGGESRQHSVLKENSLPKPKLPEDSVISPYNI STGYSGLATGNGLSDS PAGESK	120	SOBP_MOUSE
<u>A7XYI6</u>	FRSYPTDGGESRQHSVLKENSLPKPKLPEDSVISPYNI STGYSGLATGNGLSDS PAGESK	120	SOBP_RAT
*****			
<u>Chimp_SOBP</u>	HGNVPIIVPLIPPPFIKPPAEDDVSNOVIMCAWCQKVGIKRYSLSMGSSEVKSFCSEKCPA	180	
<u>A7XYQ1</u>	HGNVPIIVPLIPPPFIKPPAEDDVSNOVIMCAWCQKVGIKRYSLSMGSSEVKSFCSEKCPA	180	SOBP_HUMAN
<u>A7XYI9</u>	HGNVPIIVPLIPPPFIKPPAEDDVSNOVIMCAWCQKVGIKRYSLSMGSSEVKSFCSEKCPA	180	A7XYI9_MACMU
<u>A7XYH9</u>	HGNVPIIVPLIPPPFIKPPAEDDVSNOVIMCAWCQKVGIKRYSLSMGSSEVKSFCSEKCPA	180	SOBP_BOVIN
<u>Q0P5V2</u>	HGNVPIIVPLIPPPFIKPPAEDDVSNOVIMCAWCQKVGIKRYSLSMGSSEVKSFCSEKCPA	180	SOBP_MOUSE
<u>A7XYI6</u>	HGNVPIIVPLIPPPFIKPPAEDDVSNOVIMCAWCQKVGIKRYSLSMGSSEVKSFCSEKCPA	180	SOBP_RAT
*****			
<u>Chimp_SOBP</u>	ACRRAYFKRNKARDEDGHAENFPQQHYAKE TPRLAFKNNCEL LVCDWC KHIRHTKEYLDF	240	
<u>A7XYQ1</u>	ACRRAYFKRNKARDEDGHAENFPQQHYAKE TPRLAFKNNCEL LVCDWC KHIRHTKEYLDF	240	SOBP_HUMAN
<u>A7XYI9</u>	ACRRAYFKRNKARDEDGHAENFPQQHYAKE TPRLAFKNNCEL LVCDWC KHIRHTKEYLDF	240	A7XYI9_MACMU
<u>A7XYH9</u>	ACRRAYFKRNKARDEDGHAENFPQQHYAKE TPRLAFKNNCEL LVCDWC KHIRHTKEYLDF	240	SOBP_BOVIN
<u>Q0P5V2</u>	ACRRAYFKRNKARDEDGHAENFPQQHYAKE TPRLAFKNNCEL LVCDWC KHIRHTKEYLDF	240	SOBP_MOUSE
<u>A7XYI6</u>	ACRRAYFKRNKARDEDGHAENFPQQHYAKE TPRLAFKNNCEL LVCDWC KHIRHTKEYLDF	240	SOBP_RAT
*****			
<u>Chimp_SOBP</u>	GDGERRLQFCSAKCLNOYKMDIFYKETQANLPAGLCSTLHPPMENKAE GTGVQLLTPD SW	300	
<u>A7XYQ1</u>	GDGERRLQFCSAKCLNOYKMDIFYKETQANLPAGLCSTLHPPMENKAE GTGVQLLTPD SW	300	SOBP_HUMAN
<u>A7XYI9</u>	GDGERRLQFCSAKCLNOYKMDIFYKETQANLPAGLCSTLHPPMENKAE GTGVQLLTPD SW	300	A7XYI9_MACMU
<u>A7XYH9</u>	GDGERRLQFCSAKCLNOYKMDIFYKETQANLPAGLCSTLHPPMENKAE GTGVQLLTPD SW	300	SOBP_BOVIN
<u>Q0P5V2</u>	GDGERRLQFCSAKCLNOYKMDIFYKETQANLPAGLCSTLHPPMENKAE GTGVQLLTPD SW	300	SOBP_MOUSE
<u>A7XYI6</u>	GDGERRLQFCSAKCLNOYKMDIFYKETQANLPAGLCSTLHPPMENKAE GTGVQLLTPD SW	300	SOBP_RAT
*****			
<u>Chimp_SOBP</u>	NIPLTDARRKAPSPVATAGQSQGGPSSASTTVSPSDTANC SVTKIPTVPVKSIPISETPN	360	
<u>A7XYQ1</u>	NIPLTDARRKAPSPVATAGQSQGGPSSASTTVSPSDTANC SVTKIPTVPVKSIPISETPN	360	SOBP_HUMAN
<u>A7XYI9</u>	NIPLTDARRKAPSPVATAGQSQGGPSSASTTVSPSDTANC SVTKIPTVPVKSIPISETPN	360	A7XYI9_MACMU
<u>A7XYH9</u>	NIPLTDARRKAPSPVATAGQSQGGPSSASTTVSPSDTANC SVTKIPTVPVKSIPISETPN	360	SOBP_BOVIN
<u>Q0P5V2</u>	NIPLTDARRKAPSPVATAGQSQGGPSSASTTVSPSDTANC SVTKIPTVPVKSIPISETPN	360	SOBP_MOUSE
<u>A7XYI6</u>	NIPLTDARRKAPSPVATAGQSQGGPSSASTTVSPSDTANC SVTKIPTVPVKSIPISETPN	360	SOBP_RAT
*****			
<u>Chimp_SOBP</u>	IPVSVQPPASIGPPLGVPPRSPPMVMNTRGVPVLP IFMEQQIMQOIRPPFIRGPPPHAS	409	
<u>A7XYQ1</u>	IPVSVQPPASIGPPLGVPPRSPPMVMNTRGVPVLP IFMEQQIMQOIRPPFIRGPPPHAS	420	SOBP_HUMAN
<u>A7XYI9</u>	IPVSVQPPASIGPPLGVPPRSPPMVMNTRGVPVLP IFMEQQIMQOIRPPFIRGPPPHAS	420	A7XYI9_MACMU
<u>A7XYH9</u>	IPVSVQPPASIGPPLGVPPRSPPMVMNTRGVPVLP IFMEQQIMQOIRPPFIRGPPPHAS	420	SOBP_BOVIN
<u>Q0P5V2</u>	IPVSVQPPASIGPPLGVPPRSPPMVMNTRGVPVLP IFMEQQIMQOIRPPFIRGPPPHAS	420	SOBP_MOUSE
<u>A7XYI6</u>	IPVSVQPPASIGPPLGVPPRSPPMVMNTRGVPVLP IFMEQQIMQOIRPPFIRGPPPHAS	420	SOBP_RAT
*****			
<u>A7XYQ1</u>	NPNSPLSNPMLPGIGPPP GGPRNLGPTS SPMPHRPMLSPHHPSTPTMPGNPPGLLPPPP	480	SOBP_HUMAN
<u>A7XYI9</u>	NPNSPLSNPMLPGIGPPP GGPRNLGPTS SPMPHRPMLSPHHPSTPTMPGNPPGLLPPPP	480	A7XYI9_MACMU
<u>A7XYH9</u>	NPNSPLSNPMLPGIGPPP GGPRNLGPTS SPMPHRPMLSPHHPSTPTMPGNPPGLLPPPP	480	SOBP_BOVIN
<u>Q0P5V2</u>	NPNSPLSNPMLPGIGPPP GGPRNLGPTS SPMPHRPMLSPHHPSTPTMPGNPPGLLPPPP	480	SOBP_MOUSE
<u>A7XYI6</u>	NPNSPLSNPMLPGIGPPP GGPRNLGPTS SPMPHRPMLSPHHPSTPTMPGNPPGLLPPPP	480	SOBP_RAT
*****			
<u>Chimp_SOBP</u>	PGAPLPSLPPFPVSMMPNGPMPVQMMNFG LPSLAPLVPPPTLLVFPYPIVPLPVPFIPI	499	
<u>A7XYQ1</u>	PGAPLPSLPPFPVSMMPNGPMPVQMMNFG LPSLAPLVPPPTLLVFPYPIVPLPVPFIPI	540	SOBP_HUMAN
<u>A7XYI9</u>	PGAPLPSLPPFPVSMMPNGPMPVQMMNFG LPSLAPLVPPPTLLVFPYPIVPLPVPFIPI	540	A7XYI9_MACMU
<u>A7XYH9</u>	PGAPLPSLPPFPVSMMPNGPMPVQMMNFG LPSLAPLVPPPTLLVFPYPIVPLPVPFIPI	540	SOBP_BOVIN
<u>Q0P5V2</u>	PGAPLPSLPPFPVSMMPNGPMPVQMMNFG LPSLAPLVPPPTLLVFPYPIVPLPVPFIPI	540	SOBP_MOUSE
<u>A7XYI6</u>	PGAPLPSLPPFPVSMMPNGPMPVQMMNFG LPSLAPLVPPPTLLVFPYPIVPLPVPFIPI	540	SOBP_RAT
*****			
<u>Chimp_SOBP</u>	IPIPHVSDSKPPNGFSSNGENFIPNAPGDSAAAGGKPSGHSLSPRDSKQSSSKSADSPPG	414	
<u>A7XYQ1</u>	IPIPHVSDSKPPNGFSSNGENFIPNAPGDSAAAGGKPSGHSLSPRDSKQSSSKSADSPPG	600	SOBP_HUMAN
<u>A7XYI9</u>	IPIPHVSDSKPPNGFSSNGENFIPNAPGDSAAAGGKPSGHSLSPRDSKQSSSKSADSPPG	600	A7XYI9_MACMU
<u>A7XYH9</u>	IPIPHVSDSKPPNGFSSNGENFIPNAPGDSAAAGGKPSGHSLSPRDSKQSSSKSADSPPG	600	SOBP_BOVIN
<u>Q0P5V2</u>	IPIPHVSDSKPPNGFSSNGENFIPNAPGDSAAAGGKPSGHSLSPRDSKQSSSKSADSPPG	600	SOBP_MOUSE
<u>A7XYI6</u>	IPIPHVSDSKPPNGFSSNGENFIPNAPGDSAAAGGKPSGHSLSPRDSKQSSSKSADSPPG	600	SOBP_RAT
*****			
<u>Chimp_SOBP</u>	CSGQAR-----AGSPGPPGAVGQLVFPG-VLQGPQEGVIDLTVG	453	
<u>A7XYQ1</u>	CSGQALSLAPTPAEHGERSVVDLTRRAGSPGPPGAGGQLGFPG-VLQGPQEGVIDLTVG	659	SOBP_HUMAN
<u>A7XYI9</u>	CSGQALSLAPTPAEHGERSVVDLTRRAGSPGPPGAGGQLGFPG-VLQGPQEGVIDLTVG	659	A7XYI9_MACMU
<u>A7XYH9</u>	CSGQALSLAPTPAEHGERSVVDLTRRAGSPGPPGAGGQLGFPG-VLQGPQEGVIDLTVG	659	SOBP_BOVIN
<u>Q0P5V2</u>	SSGQALSLAP--AERGRGEVVDLTRRAGSPAG--AGQPQFAG-VLHGPDQGVIDLTVG	654	SOBP_MOUSE
<u>A7XYI6</u>	SSGQALSLAP--SERGRGEVVDLTRRAGSPAG--AGQPQFAG-VLHGPDQGVIDLTVG	654	SOBP_RAT
*****			
<u>Chimp_SOBP</u>	HRARLHNVIHRA LHAHVKAEREPGAERRTCGGCRDGHCSPPAAGDPGPGAPAGPEAAAA	513	
<u>A7XYQ1</u>	HRARLHNVIHRA LHAHVKAEREPGAERRTCGGCRDGHCSPPAAGDPGPGAPAGPEAAAA	719	SOBP_HUMAN
<u>A7XYI9</u>	HRARLHNVIHRA LHAHVKAEREPGAERRTCGGCRDGHCSPPAAGDPGPGAPAGPEAAAA	719	A7XYI9_MACMU
<u>A7XYH9</u>	HRARLHNVIHRA LHAHVKAEREPGAERRTCGGCRDGHCSPPAAGDPGPGAPAGPEAAAA	717	SOBP_BOVIN
<u>Q0P5V2</u>	HRARLHNVIHRA LHAHVKAEREPGAERRTCGGCRDGHCSPPAAGDPGPGAPAGPEAAAA	714	SOBP_MOUSE
<u>A7XYI6</u>	HRARLHNVIHRA LHAHVKAEREPGAERRTCGGCRDGHCSPPAAGDPGPGAPAGPEAAAA	714	SOBP_RAT
*****			
<u>Chimp_SOBP</u>	CNVIVNGTRG-AAAEAGKSAEPPPEQPPPPPP-APPKLLSPEEPAVSELESVKENNC	570	
<u>A7XYQ1</u>	CNVIVNGTRG-AAAEAGKSAEPPPEQPPPPPP-APPKLLSPEEPAVSELESVKENNC	776	SOBP_HUMAN
<u>A7XYI9</u>	CNVIVNGTRG-AAAEAGKSAEPPPEQPPPPPP-APPKLLSPEEPAVSELESVKENNC	777	A7XYI9_MACMU
<u>A7XYH9</u>	CNVIVNGTRG-AAAEAGKSAEPPPEQPPPPPP-APPKLLSPEEPAVSELESVKENNC	775	SOBP_BOVIN
<u>Q0P5V2</u>	CNVIVNGTRS--APAEAKGAEPPEQPPPPAPP-----KLLSSSEPVVNELESVKENNC	767	SOBP_MOUSE
<u>A7XYI6</u>	CNVIVNGTRS--APAEAKGAEPPEQPPPPAPP-----KLLSSSEPVVNELESVKENNC	767	SOBP_RAT
*****			
<u>Chimp_SOBP</u>	ASNCHLDGEAAKLLGEEALAGGDKSDPNLNNPADEHDHAYALRMLPKTCGVIQPVKPAE	630	
<u>A7XYQ1</u>	ASNCHLDGEAAKLLGEEALAGGDKSDPNLNNPADEHDHAYALRMLPKTCGVIQPVKPAE	836	SOBP_HUMAN
<u>A7XYI9</u>	ASNCHLDGEAAKLLGEEALAGGDKSDPNLNNPADEHDHAYALRMLPKTCGVIQPVKPAE	837	A7XYI9_MACMU
<u>A7XYH9</u>	ASNCHLDGEAAKLLGEEALAGGDKSDPNLNNPADEHDHAYALRMLPKTCGVIQPVKPAE	835	SOBP_BOVIN
<u>Q0P5V2</u>	ASNCHLDGEAAKLLGEEALAGGDKSDPNLNNPADEHDHAYALRMLPKTCGVIQPVKPAE	827	SOBP_MOUSE
<u>A7XYI6</u>	ASNCHLDGEAAKLLGEEALAGGDKSDPNLNNPADEHDHAYALRMLPKTCGVIQPVKPAE	827	SOBP_RAT
*****			
<u>Chimp_SOBP</u>	KAMAMP C I I S P M L S A G P E D L E P P L K R R C L R I R N Q N K	668	
<u>A7XYQ1</u>	KAMAMP C I I S P M L S A G P E D L E P P L K R R C L R I R N Q N K	873	SOBP_HUMAN
<u>A7XYI9</u>	KAMAMP C I I S P M L S A G P E D L E P P L K R R C L R I R N Q N K	874	A7XYI9_MACMU
<u>A7XYH9</u>	KAMAMP C I I S P M L S A G P E D L E P P L K R R C L R I R N Q N K	872	SOBP_BOVIN
<u>Q0P5V2</u>	KAMAMP C V I S P M L S A G P E D L E P P L K R R C L R I R N Q N K	864	SOBP_MOUSE
<u>A7XYI6</u>	KAMAMP C V I S P M L S A G P E D L E P P L K R R C L R I R N Q N K	864	SOBP_RAT
*****			