

ALDH3B3 - Rat	MPMVILMPELPMVILLYNRYLVPCSVRLVLSTGGAVLKVLSTGGAVLRLV	STGGTVLRRQITGGTDPFEELQRLKEAFNTGKTKMAKFRAEQLESLGQF
ALDH3B3 - Mouse	-----	-MSTKGKHPRADQGTDPFEELQRLKEAFNTGKTKMAKFRAEQLESLGQF
ALDH3B2 - Rat	-----	LEHKLSINTAPSCRAGPSEATLHTLREAFNAGRTRPAEFTAQLQGLGRF
ALDH3B2 - Mouse	-----	-MSAAETGSEPSQAGPSEATLHSLREAFNAGRTRPTEFRTAQLRSLSGRF
ALDH3B2 - Human	-----	-----
ALDH3B1 - Mouse	-----	MDSFEDKLQQLREAFKEGRTRSAEFRAAQLQGLSHF
ALDH3B1 - Rat	-----	MDSFEDKLQQLREAFNAGRTRSAEFRAAQLQGLSHF
ALDH3B1 - Human	-----	MDPLGDTLRLRRLREAFHAGRTRPAEFRRAAQLQGLGRF
ALDH3B3 - Rat	LQDN SKQLHD ALD GDL GKSA FES DMSE II LCQ NEV D LALK N LQT WMK DES	VSTNFLIKFSSA FIR KEP FG LV LI I APW NY PLN LM IMPL V GAIA AG NC V
ALDH3B3 - Mouse	LQDN SKQLHD ALD GDL GKSG FES DMSE II LCEN EVD LALK N LQT WMK DES	VSTNLLT KLS TAF FIR KEP FG LV LI I APW NY PLN LM IMPL V GAIA AG NC V
ALDH3B2 - Rat	LKD N KQLL QD ALAK DV GKSA FES DMSE II LCQ NEV D LALK N LQT WMK DES	VSTNFLIKFSSA FIR KEP FG LV LI I APW NY PLN LM IMPL V GAIA AG NC V
ALDH3B2 - Mouse	LQEN KELL QD ALAK DV GKSG FES DMSE II LCEN EVD LALK N LQT WMK DES	VSTNLLT KLS TAF FIR KEP FG LV LI I APW NY PLN LM IMPL V GAIA AG NC V
ALDH3B2 - Human	-----	RSTNL FM KLD S V FI W KEP FG LV LI I APW NY PLN LT L V L V G A I A A G C S V V
ALDH3B1 - Mouse	LRDN KQQL QE ALA QD LH KSA FE A E V S E I A I S Q A E V D L A L R N L R S W M K D E K	VSKN L AT Q L D S A F I R K E P FG LV LI I V P W N Y P L N L T L V P L V G A I A A G N C V V
ALDH3B1 - Rat	LRDN KQQL QE ALA QD LH KSA FE A E V S E I A I S Q A E V D L A L R N L R S W M K D E K	VSKN L AT Q L D S A F I R K E P FG LV LI I V P W N Y P L N L T L V P L V G A I A A G N C V V
ALDH3B1 - Human	LQEN KQLL HD ALA QD LH KSA FE A E V S E I A I S Q G E V T L A L R N L R S W M K D E K	VPKN L AT Q L D S A F I R K E P FG LV LI I V P W N Y P L N L T L V P L V G A I A A G N C V V
ALDH3B3 - Rat	LKP SEMS K N T E KV LA E L L P Q Y L D Q S C F A V V L G G P E E T G Q L L K H K F D Y I F F	TGS PRVG KIV MAAA AKH L T P I T L E L G G K N P C Y V D D N C D P Q T V A N R V A W F R
ALDH3B3 - Mouse	LKP SE I S K N T E KV LA E L L P Q Y L D Q S C F A V V L G G P E E T G Q L L K H K F D Y I F F	TGS PRVG KIV M A A A K H L T P I T L E L G G K N P C Y V D D N C D P Q T V A N R V A W F R
ALDH3B2 - Rat	LKP SEMS K N T E KV LA E L L P Q Y L D Q S C F A V V L G G P E E T G Q L L K H K F D Y I F F	TGS PRVG KIV M A A A K H L T P I T L E L G G K N P C Y V D D N C D P Q T V A N R V A W F R
ALDH3B2 - Mouse	LKP SE I S K N T E KV LA E L L P Q Y L D Q S C F A V V L G G P E E T G Q L L K H K F D Y I F F	TGS PRVG KIV M A A A K H L T P I T L E L G G K N P C Y V D D N C D P Q T V A N R V A W F C
ALDH3B2 - Human	LKP SE I S Q T E KV LA E V L P R Y L D Q S C F A V V L G G P Q E T G Q L L E H K F D Y I F F	TG NAY V G K I V MAAA AKH L T P I T L E L G G K N P C Y V D D N C D P Q T V A N R V A W F R
ALDH3B1 - Mouse	LKP SE I S K A T E K I L A E V L P R Y L D Q S C F A V V L G G P Q E T G Q L L E H R F D Y I F F	TG N Y V G K I V MAAA AKH L T P I T L E L G G K N P C Y V D D N C D P Q T V A N R V A W F R
ALDH3B1 - Rat	LKP SE I S K A T E K I L A E V L P R Y L D Q S C F A V V L G G P Q E T G Q L L E H R F D Y I F F	TGS PRVG KIV M A A A K H L T P I T L E L G G K N P C Y V D D N C D P Q T V A N R V A W F R
ALDH3B1 - Human	LKP SE I S K N V E K I L A E V L P Q Y V D Q S C F A V V L G G P Q E T G Q L L E H R F D Y I F F	TGS PRVG KIV M A A A K H L T P I T L E L G G K N P C Y V D D N C D P Q T V A N R V A W F R
ALDH3B3 - Rat	YFNAG QTC V A P D Y V L C S Q E M Q E R L V P A L Q N A I T R F Y G D N P Q T S P N L G R I I	NQKHFERLQGLLGCGRVAIAGGQSDEGERYIAPTVLVDVQETEPVMQEEIF
ALDH3B3 - Mouse	YFNAG QTC V A P D Y V L C S Q E M Q E Q L V P A L Q N A I T R F Y G D N P Q T S P N L G R I I	NQKHFERLQGLLGCGRVAIAGGQSDEGERYIAPTVLVDVQETEPVMQEEIF
ALDH3B2 - Rat	YFNAG QTC V A P D Y V L C S Q E M Q E R L V P A L Q N A I T R F Y G D N P Q T S P N L G R I I	NQKHFERLQGLLGCGRVAIAGGQSDEGERYIAPTVLVDVQETEPVMQEEIF
ALDH3B2 - Mouse	YFNAG QTC V A P D Y V L C S Q E M Q E R L V P A L Q N S I T R F Y G D N P Q T S P N L G R I I	TGS PRVG KIV M A A A K H L T P I T L E L G G K N P C Y V D D N C D P Q T V A N R V A W F R
ALDH3B2 - Human	YFNAG QTC V A P D Y V L C S Q E M Q E R L V P A L Q N S I T R F Y G D N P Q T S P N L G R I I	TGS PRVG KIV M A A A K H L T P I T L E L G G K N P C Y V D D N C D P Q T V A N R V A W F C
ALDH3B1 - Mouse	YFNAG QTC V A P D Y V L C S Q E M Q E R L V P A L Q N A I T R F Y G D N P Q T S P N L G R I I	TG NAY V G K I V MAAA AKH L T P I T L E L G G K N P C Y V D D N C D P Q T V A N R V A W F R
ALDH3B1 - Rat	YFNAG QTC V A P D Y V L C S Q E M Q E R L V P A L Q N A I T R F Y G D N P Q T S P N L G R I I	TG N Y V G K I V MAAA AKH L T P I T L E L G G K N P C Y V D D N C D P Q T V A N R V A W F R
ALDH3B1 - Human	YFNAG QTC V A P D Y V L C S Q E M Q E R L V P A L Q N S I T R F Y G D D P Q S S P N L G R I I	TGS PRVG KIV M A A A K H L T P I T L E L G G K N P C Y V D D N C D P Q T V A N R V A W F R
ALDH3B3 - Rat	GPI L P L V T V R N L D E A I E F I N R R E K P L A L Y A Y S N N V E I K Q V L A R T S S G F	C GNDGFHMHTLSSLPFGGVGSSGMGRYHGKFSFDTFSNQRACLLCSGME
ALDH3B3 - Mouse	GPI L P L V T V R S L D E A I E F M N Q R E K P L A L Y A Y S N N A E V I K Q V L A R T S S G F	C GNDGFHMHTLSSLPFGGVGSSGMGRYHGKFSFDTFSNQRACLLCSGME
ALDH3B2 - Rat	GPI L P L V T V R S L D E A V N F I N Q R E K P L A L Y A F S N N G Q V T Q M L E C T S S G F	G GNDGFLYLTLPALPLGGVGNSGMGRYHGKFSFDTFSHQRACLLSPGME
ALDH3B2 - Mouse	GPI L P L V T V R S L D E A I E F I N R R E K P L A L Y A F S N N N Q V N Q M L E R T S S G F	G GNDGFLYLTLPALPLGGVGNSGMGRYHGKFSFDTFSHRTCLLAPSGLE
ALDH3B2 - Human	GPI L P I V N V Q S V D E A I K R Q E K P L A L Y A F S N N S Q V V N Q M L E R T S S G F	G GNEGFTYISSLSPVFGGVGNSGMGRYHGKFTFDTSHRTCLLAPSGLE
ALDH3B1 - Mouse	GPI L P L V T V R S L D E A I E F M N R R E K P L A L Y A F S K R S Q V I K Q V L A R T S S G F	C GNDGFHMHTLSSLPFGGVGTSGMGRYHGKFSFDTFSNQRACLLRSFGME
ALDH3B1 - Rat	GPI L P L V T V T N L D E A I E F I N R R E K P L A L Y A F S K R S Q V I K Q V L A R T S S G F	C GNDGFHMHTLSSLPFGGVGTSGMGRYHGKFSFDTFSHQRACLLRSFGME
ALDH3B1 - Human	GPI L P I V N V Q S L D E A I E F I N R R E K P L A L Y A F S N S S Q V V K R V L T Q T F D S H R A C L L R S P G M E	C GNDGFHMHTLSSLPFGGVGASGMGRYHGKFSFDTFSHRTCLLAPSGLE
ALDH3B3 - Rat	KLN DL R Y P P Y S P R R Q Q L L R W A M G S Q C S S L --	CGNDGFHMHTLSSLPFGGVGSSGMGRYHGKFSFDTFSNQRACLLCSGME
ALDH3B3 - Mouse	KLN GL R Y P P Y S P R R Q Q L L R W A I G S E S C T L L --	CGNDGFHMHTLSSLPFGGVGSSGMGRYHGKFSFDTFSNQRACLLCSGME
ALDH3B2 - Rat	KLN DL R Y P P Y G T W D Q Q L I S W A M G S Q C S T L L --	G GNDGFLYLTLPALPLGGVGNSGMGRYHGKFSFDTFSHQRACLLSPGME
ALDH3B2 - Mouse	KLN DL R Y P P Y G P W N Q Q L I S W A I G S R C S T L L --	G GNDGFLYLTLPALPLGGVGNSGMGRYHGKFSFDTFSHRTCLLAPSGLE
ALDH3B2 - Human	KL R E I H Y P P Y T D W N Q Q L L R W G M G S Q C S T L L --	G GNEGFTYISSLSPVFGGVGNSGMGRYHGKFTFDTSHRTCLLAPSGLE
ALDH3B1 - Mouse	KIN DL R Y P P Y S S R N L R V L L V A M E E R C C S T L L	C GNDGFHMHTLSSLPFGGVGTSGMGRYHGKFSFDTFSNQRACLLRSFGME
ALDH3B1 - Rat	KIN DL R Y P P Y T S R N L R V L L V A M E K R C C S T L L	C GNDGFHMHTLSSLPFGGVGASGMGRYHGKFSFDTFSHQRACLLRSFGME
ALDH3B1 - Human	KLN AL R Y P P Q S P R R L R M L L V A M E A Q G C S T L L	C GNDGFHMHTLSSLPFGGVGASGMGRYHGKFSFDTFSHRTCLLAPSGLE

Figure S1. Alignment of *ALDH3B2* genes in human, rat and mouse created by ClustalW. Dashes (-) represent sequence gaps, asterisks (*) represent identical amino acids (AAs), colons (:) represent very similar AAs, periods (.) represent less similar AAs, whereas spaces () represent dissimilar AAs.

Table S1. Known copy number variations in humans. Included are the variation ID from the Database of Genomic Variants, ALDH family member, type (CNV – copy number variation with changes > 1 kb; InDel – insertions and deletions with changes 100–999 bp; inv — inversions with changes that invert the nucleotide sequence), whether the change was a loss or gain, site (intron — change only affects an intronic region; part — change affects one or more exons; whole — change affects the entire gene), sample size and chromosomal location

Variation ID	ALDH	Type	Gain/loss	Site	Sample size (variant/ controls)	Chr
26310	<i>I6A1</i>	InDel	Gain	Intron	1/1	19q13.33
26311	<i>I6A1</i>	InDel	Gain	Intron	1/1	19q13.33
26312	<i>I6A1</i>	InDel	Gain	Intron	1/1	19q13.33
26313	<i>I6A1</i>	InDel	Loss	Intron	1/1	19q13.33
109892	<i>IA1</i>	InDel	Gain	Intron	1/1	9q21.13
102109	<i>IA2</i>	CNV	Loss	Intron	1/1	15q22.1
25534	<i>IA2</i>	InDel	Loss	Intron	1/1	15q22.1
40101	<i>IA2</i>	InDel	Loss	Intron	1/1	15q22.1
41386	<i>IA2</i>	InDel	Loss	Intron	1/1	15q22.1
45349	<i>IA2</i>	InDel	Loss	Intron	1/1	15q22.1
45350	<i>IA2</i>	InDel	Loss	Intron	1/1	15q22.1
102186	<i>IA3</i>	CNV	Loss	Intron	1/1	15q26.3
11819	<i>IA3</i>	InDel	Loss	Intron	1/36	15q26.3
25599	<i>IA3</i>	InDel	Loss	Intron	1/1	15q26.3
25600	<i>IA3</i>	InDel	Loss	Intron	1/1	15q26.3
25601	<i>IA3</i>	InDel	Loss	Intron	1/1	15q26.3
40124	<i>IA3</i>	InDel	Loss	Intron	1/2	15q26.3
42429	<i>IA3</i>	InDel	Loss	Intron	1/1	15q26.3
42898	<i>IA3</i>	InDel	Loss	Intron	1/1	15q26.3
45395	<i>IA3</i>	InDel	Loss	Intron	1/1	15q26.3
61482	<i>IA3</i>	InDel	Loss	Intron	1/1	15q26.3
68446	<i>IL1</i>	InDel	Loss	Intron	1/39	3q21.2
106822	<i>IL2</i>	CNV	Gain	Intron	1/1	12q23.3
42760	<i>3B2</i>	InDel	Loss	Intron	1/1	17p11.2
24787	<i>3B2</i>	InDel	Loss	Intron	1/1	11q13.2
44926	<i>3B2</i>	InDel	Loss	Intron	1/1	11q13.2
81276	<i>5A1</i>	InDel	Gain	Intron	1/90	6p22.2

Continued

Table S1. Continued

Variation ID	ALDH	Type	Gain/loss	Site	Sample size (variant/ controls)	Chr
93550	5A1	CNV	Loss	Intron	2/90	6p22.2
99466	5A1	CNV	Loss	Intron	1/1	6p22.2
33982	7A1	InDel	Gain	Intron	1/1	5q23.2
97538	9A1	InDel	Gain	Intron	1/1	1q24.1
23991	9A1	InDel	Gain	Intron	1/1	1q24.1
11004	9A1	InDel	Loss	Intron	15/50	1q24.1
35661	16A1	CNV	Gain	Part	1/1	19q13.33
114045	1A3	CNV	Gain	Part	1/30	15q26.3
72379	1A3	CNV	Loss	Part	1/39	15q26.3
4352	1L1	CNV	2G IL	Part	3/95	3q21.2
59786	1L1	Inv	Inversion	Part	1/1	3q21.2
68445	1L1	CNV	Loss	Part	1/39	3q21.2
107014	1L2	CNV	Loss	Part	1/1	12q23.3
88379	3A2	CNV	Loss	Part	1/90	17p11.2
88381	3A2	CNV	Loss	Part	1/90	17p11.2
3140	3A2	CNV	Loss	Part	4/270	17p11.2
65982	3B2	CNV	Gain	Part	2/450	11q13.2
85827	3B2	CNV	Loss	Part	2/90	11q13.2
53128	3B2	CNV	Loss	Part	2/1064	11q13.2
3055	6A1	CNV	Gain	Part	1/270	14q24.3
66668	6A1	CNV	Loss	Part	2/450	14q24.3
6793	9A1	CNV	Loss	Part	2/50	1q24.1
3856	3B1	CNV	Gain/loss	Whole	3/270	11q13.2
113072	3B1	CNV	Gain	Whole	1/30	11q13.2
30558	3B1	CNV	Gain	Whole	1/1	11q13.2
5275	3B2	CNV	Gain	Whole	1/272	11q13.1–11q13.2
5111	16A1	CNV	Loss	Whole	25/95	19q13.33
32261	16A1	CNV	Loss	Whole	18/30	19q13.32–19q13.33
5110	16A1	CNV	Loss	Whole	4/95	19q13.33
2201	1A3	CNV	Loss	Whole	3/269	15q26.3

Continued

Table S1. Continued

Variation ID	ALDH	Type	Gain/loss	Site	Sample size (variant/ controls)	Chr
47939	<i>1B1</i>	CNV	Loss	Whole	6/2906	9p13.1
30022	<i>3A1</i>	CNV	Loss	Whole	2/485	17p11.2
53160	<i>3B1</i>	CNV	Loss	Whole	2/1064	11q13.2
2931	<i>3B1</i>	CNV	Loss	Whole	8/270	11q13.2
29913	<i>3B1</i>	CNV	Loss	Whole	1/485	11q13.2
29914	<i>3B1</i>	CNV	Loss	Whole	1/485	11q13.2
47969	<i>5A1</i>	CNV	Loss	Whole	9/2906	6p22.2