

**Table S1.** Sequence of primers used for cloning cDNAs encoding  $\alpha_{3-6}$  and  $\delta$  subunits

GenBank accession number	Direction	Primer sequence (5'-3')	PCR product name/ Cloning vector
M86568 ( $\alpha_3$ )	Forward	GGTCTCTTCAAGTTGCTGTCTAAGA	ORF $\alpha_3$ / PCR® 4 TOPO®
	Reverse	CAGTGCTCTGGAAGCTGTGCTGC	
	Forward	ctttcaaatactccaccATGGTAATCACACAAATGTGGCACTT	LIC-PCR1 / PRK5
	Reverse	CTACTGTTTGC GGATCATGCCCTTG	
	Forward	ATGGTAATCACACAAATGTGGCACTT	LIC-PCR2 / PRK5
	Reverse	gtgtaaccagatcaagcttCTACTGTTTGC GGATCATGCCCTTG	
AK013727 ( $\alpha_4$ )	Forward	ATGGTTTCTGTCCAGAAGGTACCC	ORF $\alpha_4$ / PCR® 4 TOPO®
	Reverse	TTACATTAGACTTTCTGATTTCTCCATG	
	Forward	ctttcaaatactccaccATGGTTTCTGTCCAGAAGGTACCC	LIC-PCR1/ PRK5
	Reverse	TTACATTAGACTTTCTGATTTCTCCATG	
	Forward	ATGGTTTCTGTCCAGAAGGTACCC	LIC-PCR2 / PRK5
	Reverse	gtgtaaccagatcaagcttTTACATTAGACTTTCTGATTTCTCCATG	
AK083185 ( $\alpha_5$ )	Forward	GCTTCGACTATTATTCTTACTGGGA	ORF $\alpha_5$ / PCR® 4 TOPO®
	Reverse	GGGAGTGGGGTTTCTAGTTTAC	
	Forward	ctttcaaatactccaccATGGACAATGGAATGCTCTCTAGAT	LIC-PCR1 / PRK5
	Reverse	TTACTTTGGAGAGGTGGCCCTT	
	Forward	ATGGACAATGGAATGCTCTCTAGAT	LIC-PCR2 / PRK5
	Reverse	CCAGATTTTCTGGTTACAACTACTC	
X51986 ( $\alpha_6$ )	Forward	GCATCCCAGTGAACCATAGGATG	ORF $\alpha_6$ / PCR® 4 TOPO®
	Reverse	CCAGATTTTCTGGTTACAACTACTC	
	Forward	ctttcaaatactccaccATGGTCTTGCTTCTCCCCTGGC	LIC-PCR1 / PRK5
	Reverse	CTACTCAACAGTACTGCTCACTTC	
	Forward	ATGGTCTTGCTTCTCCCCTGGC	LIC-PCR2 / PRK5
	Reverse	gtgtaaccagatcaagcttCTACTCAACAGTACTGCTCACTTC	
NM_008072 ( $\delta$ )	Forward	GTTTGAATTCATGGACGTTCTGGGCTGGCTG	ORF $\delta$ / PCR® 4 TOPO®
	Reverse	CAAACACTAGTCACATGGGTACGCCGCC	
	Forward	ctttcaaatactccaccATGGACGTTCTGGGCTGGCTGC	LIC-PCR1 / PRK5
	Reverse	CTGGCGGCGTACACCATGTGA	
	Forward	ATGGACGTTCTGGGCTGGCTGC	LIC-PCR2 / PRK5
	Reverse	gtgtaaccagatcaagcttCTGGGCGGCGTACACCATGTGA	

Legend Table 1

Primers were designed to allow the amplification of the complete open reading frame (ORF) of  $\alpha_{3-6}$  and  $\delta$  subunits. LIC: ligase independent cloning.

**Table S2**

Experimental conditions for the expression of GABA<sub>A</sub> receptors used in this work and corresponding dose-response curve fit parameters of the GABA-induced currents.

Subunits combination	Ratio ( $\alpha$ : $\beta$ : $\gamma$ 2S/ $\delta$ )	Quantity of DNA injected/oocyte (ng)	Incubation time (h)	nH	EC <sub>50</sub> ( $\mu$ M)	EC <sub>10</sub> ( $\mu$ M)
$\alpha$ 1 $\beta$ 3 $\gamma$ 2S	01:01:05	1.5-2.5	24	1.06 $\pm$ 0.09	9.99 $\pm$ 0.96 (n = 6)	1.4 $\pm$ 0.5
$\alpha$ 2 $\beta$ 3 $\gamma$ 2S	01:01:05	2.5	24	1.70 $\pm$ 0.28	1.31 $\pm$ 0.18 (n = 5)	0.4 $\pm$ 0.09
$\alpha$ 3 $\beta$ 3 $\gamma$ 2S	01:01:05	1.35	24	1.34 $\pm$ 0.09	10.89 $\pm$ 0.61 (n = 6)	1.40 $\pm$ 0.21
$\alpha$ 4 $\beta$ 3 $\gamma$ 2S	01:01:10	1.5	48	1.37 $\pm$ 0.25	26.6 $\pm$ 4.99 (n = 5)	5.2 $\pm$ 1.55
$\alpha$ 4 $\beta$ 3 $\delta$	05:01:05	1.5	48	1.13 $\pm$ 0.15	1.88 $\pm$ 0.26 (n = 11)	0.3 $\pm$ 0.07
$\alpha$ 5 $\beta$ 3 $\gamma$ 2S	01:01:05	0.5	48	1.44 $\pm$ 0.17	2.12 $\pm$ 0.27 (n = 6)	0.47 $\pm$ 0.09
$\alpha$ 6 $\beta$ 3 $\gamma$ 2S	01:01:05	0.5	48	0.91 $\pm$ 0.12	1.21 $\pm$ 0.2 (n = 6)	0.11 $\pm$ 0.04
$\alpha$ 6 $\beta$ 3 $\delta$	01:01:05	0.5	48	0.99 $\pm$ 0.10	0.75 $\pm$ 0.08 (n = 5)	0.08 $\pm$ 0.02

nH : Hill slope; EC<sub>50</sub> and EC<sub>10</sub> are the GABA concentration need to achieve 50 and 10% of the maximal GABA current.