Residue #	Mutation	Family	Degree	Assays	Notes	Conclusion	Classification	Paper
49	I65T	Rhodopsin	-	Spectra	Red-Green color receptors spectral difference is not caused by this position. Not 1 of the 7 positions that do.		No effect	Asenjo et al Neuron. 1994 May;12(5):1131-8.
	I42F	C5A receptor	+	Surface expression by FACS analysis. Agonist binding affinities	2 fold decrease in surface expression. No change in ligand affinity for MIP1 agonist and 4 fold increase in binding for RANTES		Mixed (expression, ligand binding)	Howard et al J Biol Chem. 1999 Jun 4;274(23):16228-34
50	M67L (coupled to G70L)	CCKB receptor	-	Competition binding experiments using [I]CCK{SUB}8{sub} as radioligand	No change or minimal change		No effect	Kopin et al J Biol Chem 1995; 270:5019-23
293	W367A	5HT2A receptor	+++	PI hydrolysis, IP release, agonist bindir	Significant reduction in affinity for agonist		Ligand Binding	Roth et al Mol Pharmacol. 1997 Aug;52(2):259-66.
	F293E	Rhodopsin	+/-		Small shift in MI-MII equilibrium towards MI at pH 5.8 and 7.8		No significant shift	Weitz et al Biochemistry. 1993 Dec 28;32(51):14176-82.
	F309Y	Opsin	+	Agonist binding	Agonist binding weak/no effect, but one of 7 residues responsible for red-> green color discrimination		Ligand Binding	Asenjo et al Neuron. 1994 May;12(5):1131-8.
	R295Q	Prostanoid receptor	+++	Agonist binding	Agonist binding abolished		Ligand Binding	Funk et al Mol Pharmacol. 1993 Nov;44(5):934-9.
	R302Q	Prostaglandin receptor	+++	cAMP dependent reporter gene assay	Signaling decreasesm 10-100 fold		Signaling	Kedzie et al Mol Pharmacol. 1998 Sep;54(3):584-90.
113	W102F	Serotonin (5HT6)			Ligand Binding effect		Ligand Binding	Boess et al J Neurochem 71(5): 2169-77
	W101A/F	M1 muscarinic		Antagonist binding affinity			Ligand Binding	Matsui et al Mol Pharmacology 47(1): 88-98
	E113Q	Rhodopsin	+++	Spectra	Absorption shifts to 380nm indicating deprotonation of Schiff's base		Ligand Interaction	Nathans et al Biochemistry. 1990 Oct 16;29(41):9746-52.
	L111F	Dopamine			Ligand Binding effect		Ligand Binding	Simpson et al Mol Pharmacology 56(6): 1116-26.
	A104V	Angiotensin	++	Agonist binding	Specific agonist binding affected		Ligand Binding	Perlman et al Mol Pharmacol. 1997 Feb;51(2):301-11.
	H108A	Tachykinin Nk1	+	Ca2+ mobilization following substance P stimulus	Lower response than WT		Signaling	Lundstrom et al Eur J Pharmacol. 1997 Oct 15;337(1):73-81.
	Q109A	Tachykinin Nk2	-	Agonist-stimulated PI hydrolysis Competition binding experiments using [H]SR48968 (SR48968) or [I]NKA (NKA) as radioligands	Potency Unaffected; Efficacy Unaffected		No effect	Huang et al Biochemistry 1995; 34:10048-55
	V130T	CCK2 cholecystokinin	-	Competition binding experiments using	Agonist & antagonist binding weak or no effect		No effect	Kopin et al J Biol Chem. 1995 Mar 10;270(10):5019-23
	Y145A	Neurotensin -1	-	Neurotensin & SR48692 binding to NR1	No significant effect		No effect	Labbe-Julie et al J Biol Chem. 1998 Jun 26;273(26):16351-7.
	I117L	Bombesin	-	Bombesin binding assay	No effect		No effect	Akeson et al J Biol Chem. 1997 Jul 11;272(28):17405-9.
84	L88F	Dopa1B	+/-	Agonist & antagonist binding affinity	Little decrease in agonist affinity & no change in antagonist affinity		Little effect	Cravchik et al Pharmacogenetics. 1999 Apr;9(2):199-206.
	S93D	Chemokine receptor	-	Ligand binding, PI turnover	No effect on ligand binding or signal transduction		No significant effect	Rosenkilde et al J Biol Chem. 2000 Aug 25;275(34):26309-15.
108	L119I	Opioid receptor	-	Binding assay for u-opioid ligands, cAMP assay	Ki value for DAMGO ~ WT		No effect	minami et al Mol Pharmacol. 1996 Nov;50(5):1413-22.
158	S157C (double mutant with C118S)	Dopamine D2		SCAM		Structural study	Not part of binding site	Javitch et al Biochemistry. 2000 Oct 10;39(40):12190-9
	R137A	Muscarinic-1		Receptor binding of agonists, carbachol stimulated PI hydrolysuis & cAMP accumulation	~ to ET coupling to PI hydrolysis		No effect	Lee NH et al Mol Pharmacol. 1996 Jul;50(1):140-8.
	K174A	Rat bradykinin receptor		Affinity labeling and immunochemistry	Radiolabeled crosslinker that attaches to nearby amine groups attached to N terminal region.	Structural study	Residue close to peptide binding region.	J Biol Chem. 1996 Nov 1;271(44):27382-7.
	I533L	Thyrotropin receptor	+/-	TSH affinity, Signaling=cAMP response	Actually increased ligand affinity but no effect on signaling. Still not as critical as neighboring residues for signaling.		Ligand Binding	
213	Y194F	A1A adrenergic recepto	-	Ligand Binding affinity, receptor activation measured by IP3 formation	Affinity used to determine ligand interacting region		No effect	Wetzel et al Receptors Channels. 1996;4(3):165-77.
	F244A	5HTA	+++	Agonist stimulated PI3 hydrolysis	Agonist specific decrease in affinity		Ligand Binding, signaling	Shapiro et al Mol Pharmacol. 2000 Nov;58(5):877-86.
	C244F	NK1 receptor	+/-	I125Ele binding	Agonist binding was weak or had no effect		No significant effect	Gether et al Mol Pharmacol. 1994 Mar;45(3):500-8.
	L222V (triple mutant)	Neuromedin B receptor	-	NMB binding affinity	No effect on agonist affinity		No effect	Fathi et al J Biol Chem. 1993 Jul 15;268(20):14622-6.
252	R240H	Angiotensin-2	-	IP production	Agonist stimulated IP levels were comparable to WT		No effect	Miura et al FEBS Lett. 2000 Mar 31;470(3):331-5.
	R241E	N-formyl peptide receptor	-	Intracellular Ca mobilization	No significant effect. Comparable to WT		No effect	Prosnitz et al Biochem J. 1993 Sep 1;294 (Pt 2):581-7.
	T323A	Endothelin receptor		Agonist stimulated ERK activation	No effect		No effect	Vichi et al J Biol Chem. 1999 Apr 9;274(15):10331-8.
	R280L	Opioid receptor	+++	Ability of agonist to inhibit Forskolin stimulated cAMP production	the ability of DAMGO to inhibit forskolin-stimulated cyclic AMP production was greatly reduced		Signaling	Wang et al J Neurochem. 1999 Mar;72(3):1307-14.
166	A157V	Melatonin receptor	-	Affinity to ligand	Similar to WT		No effect	Ebisawa et al Biochem Biophys Res Commun. 1999 Sep 7;262(3):832-7.
308	F304I	Angiotensin-2A receptor	-	EC50 of agonist binding, IP production	Similar to WT.		No effect	Parnot et al Proc Natl Acad Sci U S A. 2000 Jun 20;97(13):7615-20.
	Y373A (triple mutant w/ Y371A, Y372A)	Thrombin receptor	++	Agonist induced Ca release, expression levels	Inter and intra molecular tethered ligand binding studied. YYY mutant and F43A mutant required for peptide binding and ensuing signaling	Multiple mutations and deletions.. Cant really consider as a point mutation	Ligand Binding/Signalin	Chen J et al J Biol Chem. 1994 Jun 10;269(23):16041-5.
37	N38A (triple mutant L37A, K39A)	IL-8A receptor	-	Expression levels and Kd of ligand & Ca flux levels	No significant diff of triple mutant w.r.t WT		No effect	Leong et al J Biol Chem. 1994 Jul 29;269(30):19343-8.
	D37A	C5A receptor	-	Affinity for ligand	No change in ligand affinity		No effect	Raffetseder et al Eur J Biochem. 1996 Jan 15;235(1-2):82-90.
40	L33A	CCR5 receptor	+++	inhibition of HIV-1_{JR-FL} entry by TAK-77	Prevented inhiition of HIV entry by TAK (antagonist) to a significant extent (40%)		Ligand Binding	Dragic et al Proc Natl Acad Sci U S A. 2000 May 9;97(10):5639-44.
	L43A	Neuropeptide Y1 receptor	-	Ability to binding NPY	No change in binding levels	No effect on ligand binding	No effect	Sautel et al Mol Cell Endocrinol. 1995 Aug 11;112(2):215-22.
	R57Q	CCKB receptor	+++	Affinity for agonist gastrin & antagonist	Significant decrease in agonist affinity		Ligand Binding	Kopin et al J Biol Chem. 1995 Mar 10;270(10):5019-23.
	V67A	Neurotensin receptor	-	Affinity for radiolableed Neurotensin or SR 48692	No effect on ligand affinity		No effect	labbe-Julie et al J Biol Chem. 1998 Jun 26;273(26):16351-7.
154	A125K	Adenosine A1 receptor	-	Saturation studies with agonist	No difference in affinity of agonists w.r.t WT		No effect	Rivkees et al J Biol Chem. 1999 Feb 5;274(6):3617-21.
170	P170L	Rhodopsin	-	Spectra, regeneration	Folded and regenerated chromophore well	Causes night blindness	No assayed effect	Kaushal et al Biochemistry 1994; 33:6121-8
	T141A	A1 adenosine	-	Agonist binding	No effect		No effect	Barbhaiya et al Mol Pharmacology 50(6): 1635-42
	P170L	C5 chemokine	++	Ligand binding, PLC stimulation	Unable to bind ligand like WT, unable to fully stimulate PLC		Mixed (Signaling, ligand binding	Kolakowski et al J Biol Chem. 1995 Jul 28;270(30):18077-82.
38	F41A	Neuropeptide Y1 receptor	-	Ability to binding NPY	No change in binding levels	No effect on ligand binding	No effect	Sautel et al Mol Cell Endocrinol. 1995 Aug 11;112(2):215-22.
	A42V	CCK-A receptor	-	Binding of agonist CCK-9 & antagonist SR27,897	Same affinity as WT		No effect	Kennedy et al Biol Chem. 1997 Jan 31;272(5):2920-6.
	Y65A	Neurotensin receptor	-	Affinity for radiolableed Neurotensin or SR 48692	No effect on ligand affinity		No effect	labbe-Julie et al J Biol Chem. 1998 Jun 26;273(26):16351-7.
43					No mutational data available. Only Chimeras or deletions			
44	Y36L	Dopamine D3	-	Radioligand binding assays Bmax & Kd	Same as WT		No effect	Lundstrom et al J Recept Signal Transduct Res. 1998 Mar-May;18(2-3):133-50.
	E13Q	Adenosine 2A receptor	+++	Agonist affinity and Na ion regulation	8-200 fold decrease in affinity to various agonists	Responsible for agonist recognition and allosteric regulation by Na ions	Ligand Binding	Gao et al Biochem Pharmacol. 2000 Sep 1;60(5):661-8.
	Y61A	CCk-B/Gastrin receptor	++	IC50 for agonist	11 time increase in IC50 values for CCK-9		Ligand Binding	Blaker et al Mol Pharmacol 2000; 58:399-406
273	L386A	Muscarinic-1	+++	Ach binding assays, PI3 turnover	4 fold (small) decrease in Ach binding, 30 fold decrease in PI3 turnover	Probably plays a role in 2nd shell in ligand interaction.	Signaling	Ward et al Mol Pharmacol. 1999 Nov;56(5):1031-41.
	C254A	A2A adenosine receptor	-	Ligand binding assays	Same as WT		No effect	Kim et al J Biol Chem. 1995 Jun 9;270(23):13987-97.
	F261Y	Angiotensin recepto	++	Agonist binding assays, IP3 accumulat	No binding of Angiotensin-2. 54% of WT response to agonist as measured by IP3 accumulation		Signaling, Ligand Bindi	Han et al Mol Endocrinol. 1998 Jun;12(6):810-4.
	I307L	NK3 tachykinin	??	Binding assays for agonist/antagonist, I	Chimeras. Not applicable			Gether et al Mol Pharmacol 1994; 45:500-8
	T354A	CCk-B/Gastrin receptor	+++	Radioligand binding assays, IP3 assays	Significantly decreased binding of certain agonists		Ligand Binding	Blaker et al Mol Pharmacol. 2000 Aug;58(2):399-406.
228	A22R	Serotonin	-	GTPgammaS binding	No change	Note: Data not shown in pape	No effect	Pregenzer et al Br J Pharmacol. 1999 May;127(2):468-72
	F254A	B2 bradykinin recep	+	binding affinity of competitive agonist HOE 140 as well as bradykinin	4.1 fold decrease in affinity for HOE. No effect on Bradykinin		Ligand Binding	Jarnagin et al Biol Chem. 1996 Nov 8;271(45):28277-86.
	T226A	N-formyl peptide rec	+	Expression & signaling measured by Ca mobilization	Decreased expression but not effect on signaling		Expression	Prossnitz et al Biochem J. 1993 Sep 1;294 (Pt 2):581-7.
311	K311A	Rhodopsin	-	Spectral measurements of retinal binding to Rho. Rate of GTPs binding to Gt. Palmitoylation of Rho	Retinal binding & stimulation of Gt same as WT		No effect	Osawa et al Mol Pharmacol 1994; 46:1036-40
	R395K	Gastrin receptor	-	CCK & agonist/antagonist affinity	Agonist & antagonist affinity change weak or no effect		No effect	Kopin et al J Biol Chem 1995; 270:5019-23
58	T58R	Rhodopsin	+++	Spectra, light microscopy to localize, Pulse chase analysis and immunoprecipitation	Spectral absorbance <1% of WT Different sub-cellular localization & glycosylation pattern	One of mutants responsible for ADRP	Signaling	Sung et al Proc Natl Acad Sci U S A. 1991 Oct 1;88(19):8840-4.
	T58R/M/S/V/A	Rhodopsin	++	Spectra, GTP exchange with transducir	Spectra are normal but transducin activity decreased(RMV mutants)		G-Coupling	Min et al J Biol Chem. 1993 May 5;268(13):9400-4.
	I75V (double mutant with V77T)	Gastrin receptor	-	Competition binding experiments using [I]CCK{SUB}8{sub} as radioligand	No effect on agonist or antagonist binding		No effect	Kopin et al Biol Chem. 1995 Mar 10;270(10):5019-23
	V45I	Adrenocorticotropin receptor	-	cAMP response to ACTH, EC50	No change in cAMP response and small change in EC50	Normal polymorphism	No effect	Naville et al J Clin Endocrinol Metab. 1996 Apr;81(4):1442-8.
163	C184S	Bradykinin B2 recep	+++	Agonist & antagonist binding	No binding of agonist or antagonist		Ligand Binding	Herzig et al J Biol Chem. 1996 Nov 22;271(47):29746-51.
	M155V	Angiotensin recepto	+/-	Binding affinity for Saralasin & Losartan	No significant change in affinity		No significant effect	Ji et al Proc Natl Acad Sci U S A. 1995 Sep 26;92(20):9240-4.
172	F185M/A	Serotonin-1B	++	Binding of agonists	Increased binding by ~ 3 fold		Ligand Binding	Granas et al Eur J Pharmacol. 1998 May 22;349(2-3):367-75
	V164A	Angiotensin-1A	-/+	EC50, Basal IP production	No change in IP production, EC50 values dropped but not mentioned in paper text as significant drop		No effect	Parnot et al Proc Natl Acad Sci U S A. 2000 Jun 20;97(13):7615-20.
	C167G	Neurokinin-2 recept	-	Competition binding of NK-A, NK-B & s	No change in IC-50 values		No effect	Bhogal et al J Biol Chem. 1994 Nov 4;269(44):27269-74.
	L174A	Neuropeptide Y1 receptor	-	Ability to binding NPY	No change in binding levels	No effect on ligand binding	No effect	Sautel et al Mol Cell Endocrinol. 1995 Aug 11;112(2):215-22.
	Y159V	Vasotocin receptor	-	Ligand binding	No reduction in ligand binding Kd measured		No effect	Hausmann et al Proc Natl Acad Sci U S A. 1996 Jul 9;93(14):6907-12.
175	W164A	Muscarinic-1	-	Binding & dissociation rates of NMS, AcH & gallamine	Same as WT		No effect	Matsui et al Mol Pharmacol 1995; 47:88-98
	W174A	Histamine-1	-	mepyramine binding assay	No effect		No effect	Wieland et al J Biol Chem. 1999 Oct 15;274(42):29994-30000
	W175A	Rhodopsin	-	Spectra, G-protein assays	No effect		No effect	Lin, S. W., and Sakmar, T. P. (1996) Biochemistry 35, 11149-11159)
	W172A/L	CB2 Cannabinoid re	+++	Cannabinoid binding, Inhibition of AC measured using cAMP levels	Abolished agonist binding, AC inhibition blocked depending on agonist used	aromatic mutations of 172 had no effect on signaling or ligand binding	Ligand Binding/Signalin	Rhee et al J Neurochem. 2000 Dec;75(6):2485-91.
229	A212E	Muscarinic-2	-/+	IC50 for inhibition of AC, max % inhibition	IC50 same as WT, max % is slightly decreased		No effect	Bulseco et al Mol Pharmacol. 1996 Jan;49(1):132-41
	T221M	Thromboxane	++	Ligand binding, receptor mediated Ca s	No change in ligand binding but 50% decrease in Ca signaling		Signaling	D'Angelo et al J Biol Chem. 1996 Mar 15;271(11):6233-40.
	A221Q	Angiotensin-II type 1	+	Antagonist binding, Signaling measured by IP3 levels	Same binding as WT and slightly decreased signaling		Signaling	Laporte et al Receptors Channels. 1998;5(2):103-12.
	K227E	N-formyl peptide rec	++	Kd for FMLP, expression, intracellular Ca mobilization	same Kd & Ca mobilization as WT. 22% of WT expression		Expression	Prossnitz et al Biochem J. 1993 Sep 1;294 (Pt 2):581-7.
255	S368A	Hm1 muscarinic ch	-	Surface expression following carbachol exposure	Polar tracer H3NMS used to tag expressed receptors bound receptors to the same extent as WT		No effect	Lameh et al J Biol Chem. 1992 Jul 5;267(19):13406-12.
	M243A	Angiotensin-1 recep	-	Losartan & Saralasin binding affinities	Same as WT		No effect	Ji et al J Biol Chem. 1994 Jun 17;269(24):16533-6.
	S244A	N-formyl peptide rec	-/+	Kd for FMLP, expression, intracellular Ca mobilization	Same Kd for agonist as WT. Slightly decreased expression		No effect	Prossnitz et al Biochem J. 1993 Sep 1;294 (Pt 2):581-7.
274	Y274F	Rhodopsin	-	Chrmophore regeneration & transducin activation	Wild type chromophore and transducin activation same as WT		No effect	Nakayama et al J Biol Chem 1991; 266:4269-75
	K300A	Prostaglandin EP3 r	-	Competition binding of agonist prostaglandin , intracellular cAMP levels to measure signaling	No effect on binding or signal transduction		No effect	Audoly et al Mol Pharmacol. 1997 Jan;51(1):61-8.
	Y297A	Bradykinin receptor	+++	Binding of antagonist HOE	7 fold decrease in affinity for antagonist		Ligand Binding	Jarnagin et al J Biol Chem. 1996 Nov 8;271(45):28277-86.
	K345A	Endothelin-B recept	-	Endothelin stimulated ERK-2 activation measured using immune complex kinase assay	Same activity level as WT		No effect	Vichi et al Biol Chem 1999; 274:10331-8
	V283A	Delta opioid recepto	-	Selective binding of delta opioid ligands	No decrease in binding of selective ligands		No effect	Valiquette et al J Biol Chem. 1996 Aug 2;271(31):18789-96.
54	N63A	alpha 1B-adrenergic receptor			Caused CA		CA	Scheer et al EMBO J. 1996 Jul 15;15(14):3566-78.
	G97A	Endothelin-1	++	Specific binding of I125 labelled endothelin	Decreased endothelin binding		Ligand Binding	Breu et al Eur J Biochem. 1995 Jul 1;231(1):266-70
83	D82A	5HT1-A receptor	+++		No detectable agonist binding		Ligand Binding	Chanda et al Mol Pharmacol. 1993 Apr;43(4):516-20.
	D79A	beta-2 adrenergic receptor	+++	Isoprotrenol binding, AC activity	10 fold inc in Kd & Kact for adenyl cyclase activation		Ligand Binding	Strader et al J Biol Chem. 1988 Jul 25;263(21):10267-71
	D70V	Dopa D1	+++	Specific & competition binding of agonists and antagonists	Decreased affinity for antagonist 3-4 fold.	sodium ion effect on receptor conformation	Ligand Binding	Tomic et al Biochem Biophys Res Commun 1993; 191:1020-7
	D120N	Dopa D2	+++	Agonist affinity, IP3 prodn.	GTP insensitive agonist binding affinity, abolished agonist stim. IP3 production		Mixed (LB, signaling)	Wang et al Mol Pharmacol. 1993 Jun;43(6):931-40
	D120N	5HT2A	+++	PI accumulation, 5HT affinity	No detectable PI3 prodn. 2 fold decrease in affinity for 5HT		Mixed (LB, signaling)	Sealfon et al J Biol Chem. 1995 Jul 14;270(28):16683-8.
133					No mutations.. Only chimeras			
263	C283V	Dopa D1	-/+	Specific & competition binding of agonists and antagonists	Minor (2 fold) decrease in antagonist & agonist affinity		No significant effect	Tomic et al Biochem Biophys Res Commun 1993; 191:1020-7
	F279V	Rhodopsin	-	Spectra	Red-Green color receptors spectral difference is not caused by this position. Not 1 of the 7 positions that do.		No effect	Asenjo et al Neuron. 1994 May;12(5):1131-8.
	C334A	Endothelin-B recept	-	Endothelin stimulated ERK-2 activation measured using immune complex kinase assay	Same activity level as WT		No effect	Vichi et al Biol Chem 1999; 274:10331-8
	G258F	SSTR5	-	preference of SSTR5 for S-28 over S-14	No change in preference		No effect	Ozenberger et al Mol Pharmacol. 1995 Jan;47(1):82-7.
299	S393A	5HT1A receptor	+++	Ligand binding	86% reduction in ligand binding		Ligand Binding	Chanda et al Mol Pharmacol. 1993 Apr;43(4):516-20.
	S281A	A2A Adenosine receptor	++	Ligand binding	Specific binding of agonist & antagonist lost	Ligand binding specificity	Ligand Binding	Kim et al J Biol Chem. 1995 Jun 9;270(23):13987-97
	S317A	P2Y1 receptor	-	Potency of agonist	No effect		No effect	Jiang et al Mol Pharmacol. 1997 Sep;52(3):499-507
	S317A	P2Y1 receptor	-	Potency of agonist	No effect		No effect	Moro et al J Med Chem. 1998 Apr 23;41(9):1456-66.
	A299E	rhodopsin	-	Photobleaching spectra	spectra similar to WT		No effect	Weitz et al Biochemistry. 1993 Dec 28;32(51):14176-82
162					Only chimeras			
174	R163F	Formyl peptide bind	++	Signaling=Agonist-stimulated increase in cytoplasmic Ca2+: Agonist binding affinity	Both low and high affinity states in mutant. Single high affinity state in wild type; High affinity state: sensitivity to GTPS Unaffected; Low affinity state: sensitivity to GTPS Abolished		Ligand Binding	Prossnitz et al J Biol Chem 1995; 270:10686-94
	Y169A	NK2 tachykinin rece	+++	Agonist-stimulated PI hydrolysis. Agonist & antagonist binding	PI hydrolysis Potency Decreased; Efficacy Decreased. Ki for NKA Receptor binding affinity Decreased. No effect on antagonist binding.		Mixed (Signaling, Ligar	Huang et al Biochemistry 1995; 34:10048-55
	F162A	Vasotocin receptor	+++	Vasotocin binding assays;	Complete loss of vasotocin binding		Ligand Binding	Hausmann et al Proc Natl Acad Sci U S A. 1996 Jul 9;93(14):6
	M208A	Neurotensin type 1	+++	125I NT binding affinity	10 fold decrease in binding affinity		Ligand Binding	Barroso et al J Biol Chem. 2000 Jan 7;275(1):328-36.
155	V147L	Angiotensin	-	Agonist binding	Comparable to WT		No effect	Ji et al Proc Natl Acad Sci U S A. 1995 Sep 26;92(20):9240-4.
137	Y521F (double w/W520Y)	thyrotropin	-	TSH binding, PIP2 & cAMP production	No change in TSH binding.TSH stimulated cAMP & PIP2 levels similar to WT		No effect	Kosugi et al Mol Endocrinol. 1994 Apr;8(4):498-509
294	F319L	Dopa D1	-	Specific & competition binding of agonists and antagonists	No change in affinity		No effect	Tomic et al Biochem Biophys Res Commun. 1993 Mar 31;191(
					Only chimeras			
272	S334A (double mutant with I333K)	Serotonin	++	Binding with various agonists	Increased affinity, decreased affinity, did not affect depending on agonist chosen		Ligand Binding	Parker et al J Neurochem. 1996 Nov;67(5):2096-103.
	N312A	beta-3 adrenergic	++	cAMP accumulation assays, binding as	No effect on ligand binding, Significant decrease in cAMP accumulation for mutant in response to certain agonists		Signaling	Gros et al Eur J Biochem. 1998 Feb 1;251(3):590-6.
	L314M	alpha-1 adrenergic	-	IP3 release, agonist binding	No change in signaling		No effect	Hwa et al J Biol Chem. 1996 Apr 5;271(14):7956-64.
	N288S (double mutant with A287L)	Serotonin-6	+++	Agonist binding affinity	7-30 fld increase for agonist sumatripan & other ergopeptine liganc		Ligand Binding	Boess et al Neurochem. 1998 Nov;71(5):2169-77.
	H394L	D2 dopamine recept	++	Agonist binding affinity	Affinity increases or decreases depending on agonist		Ligand Binding	Woodward et al J Neurochem. 1994 May;62(5):1664-9.