Any living organism receives constantly many signals that have to be evaluated and weighted to respond in an appropriate way. To perform all functions needed for precise control of homeostasis and for communication with the surrounding environment, signals coming from the outside are recognized and transferred into modulation of intracellular signaling cascades. These mediate response to the extracellular stimulus as well as intercellular communication. Cell communication is mediated by several types of receptors, located either intracellularly (including nuclear receptors) that modulate gene transcription and receptors localized on plasma membrane. Cell membrane receptors are transmembrane proteins that are divided into three superfamilies according to their structure and principles of signal transduction. These are ion channel-linked receptors, enzyme-linked receptors and G-protein-coupled receptors (GPCRs). GPCRs comprise the biggest family of membrane receptors and are one of the largest gene families in general. They are encoded by about 1% of genes in mammals. Many of them bind sensory ligands (rhodopsin, taste and olfactory receptors), but others also recognize ions, amino acids, nucleotides, peptides and large glycoproteins (1). They play a crucial role in such distant physiological functions as from chemotaxis in yeasts to neurotransmission in mammals. More than 50% of therapeutic compounds on the market act via some GPCR. Therefore it is not surprising that these receptors are intensively studied. Metabotropic glutamate receptor 1 plays fundamental role in neuronal signaling in several brain regions that control moving, processes of memory and higher cortical analyzing functions, last but not least also neuronal survival. Impairment of the mGluR1-mediated signaling could markedly contribute or cause severe neurological disasters.