Structural studies of mammalian membrane proteins, such as transporters and G protein-coupled receptors, are hampered by their lack of stability in detergents. This is manifested by a loss of activity during purification, often accompanied by aggregation, even when mild detergents such as dodecylmaltoside (DDM) are used. The situation is exacerbated during the final stages of purification, where the membrane protein is often transferred into short-chain detergents that are more suitable for crystallization, but are more destabilizing than DDM. We have developed a mutagenic strategy combined with a radioligand binding assay to isolate thermostable mutants of GPCRs. This initially led to the structure determination of the thermostabilised turkey β₁ adrenergic receptor mutant (β36-m23) in complex with the antagonist cyanopindolol at 2.7 Å resolution, with a further 8 structures recently refined with different antagonists and agonists bound. Recent work has also demonstrated the feasibility of transferring the thermostabilising mutations to related receptors and enhancing the thermostability of β36-m23 further, which resulted in better ordered crystals. In addition, preliminary data suggest that this approach will also be applicable to the thermostabilisation of transporters.