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FKBP

FK506-binding protein

FKBPs (FK506-binding proteins) belong to a distinct class of immunophilins that interact with immunosuppressants, such as FK506 and Rapamycin. FKBPs use their peptidyl-prolyl isomerase (PPIase) activity to catalyze the cis-trans conversion of prolyl bonds in proteins during protein-folding events. FKBPs also act as a unique group of chaperones. FKBPs are involved in several biochemical processes including protein folding, receptor signaling, protein trafficking and transcription. FKBP family proteins play important functional roles in the T-cell activation, when complexed with their ligands.

FKBPs, through interactions with steroid hormone receptors, kinases, or other cellular factors, play important roles in various physiological processes and, more interestingly, in pathological processes in mammals. Mammalian FKBPs can be divided into four groups: cytoplasmic, TPR domain, endoplasmic reticulum (ER) or secretory pathway and nuclear. The cytoplasmic FKBP isoforms FKBP12 and 12.6 and the nuclear FKBP25 and 133 contain a single PPIase domain. FKBP36, 38, 51 and 52 contain multiple TPR domains. The ER FKBPs: FKBP13, 19, 22, 23, 60 and 65 all contain an N-terminal ER signal peptide.