Bax is a key mediator of apoptosis. Ku70 is a known DNA repair factor. We discovered that Ku70 has a novel function to bind and inhibit Bax. Penta-peptides derived from the Bax binding domain of Ku70 were cell permeable, and protected cells from Bax-mediated cell death. These penta-peptides were named Bax Inhibiting Peptides (BIPs). BIPs may be useful therapeutic tools to rescue cells from damage. We also generated BIP mutant penta-peptides that do not inhibit Bax, but retain cell penetrating activity. Since both BIPs and their mutant proteins are cell permeable, they were named Cell Penetrating Penta-Peptides (CPP5s). Among CPP5s, VPTLK (BIP) and KLPVM (BIP mutant) were confirmed to have protein transduction activity by examining the delivery of Green Fluorescence Protein into the cell. The mechanism of cell penetration by CPP5s is not known, but it enters the cell even at 0 and 4 °C. In preliminary studies, various inhibitors of endocytosis and pinocytosis did not significantly inhibit cell entry of CPP5s. CPP5s have very low cytotoxicity in vitro and in vivo. Although further detailed investigation of the protein transduction activity is necessary, CPP5s may be utilized to develop non-toxic drug delivery technologies.