Antibiotic resistance has been identified as a major threat to human health. Its rise not only complicates treatment of infectious diseases but also threatens medical procedures like surgery, transplants or chemotherapy, which depend on prevention of infection. Several pathogens have become resistant to many different antibiotics and in some cases they are virtually untreatable. While in the past when one antibiotic became ineffective there was always a newer one that was, in the present times the number of new antibiotics in development is dangerously low. We have designed our research project to combat the growing problem of antibiotic resistance by prolonging the effectiveness of currently available antibiotics. In particular we concentrate on antibiotics of the family of aminoglycosides. We have determined the most clinically relevant mechanism of resistance to the amikacin and other related antibiotics, and how the gene coding for resistance disseminates. We are researching strategies to design adjuvants that when administered in combination with amikacin circumvent the resistance, restoring the effectiveness to the treatment.