g. Citation (summary) on the outstanding research work on which award is claimed in about 250 words **signed** by the nominator.

Antibiotic resistance is a worldwide public health problem **declared by "WHO" in 2014 as priority concern**. Infections caused by resistant microorganisms often fail to respond to conventional treatment, resulting in prolonged illness, greater risk of death and higher costs. After the discovery of MCR-1 marker no drug is left to treat such infections. Hence, in this current scenario when frontline antibiotics are losing the single mode of action against multidrug-resistant (MDR) bacteria, Dr. Khan developed an alternative approach of nanoparticle-based photodynamic therapy (PDT) and targeted bacterial cell wall to inhibit drug efflux pump. The dextran capped gold nanoparticles (GNP_{DEX}) were localized to the bacterial surface by nanoparticle attached Concanavalin-A (ConA), where GNP_{DEX} attached methylene blue (MB) photosensitizer as an MB@GNP_{DEX}-ConA formulation induced the killing of MDR *Klebsiella pneumoniae* clinical isolates. Moreover, his study further proved to control topical infection and diabetic foot ulcers using PDT approach in animal infection models.

Recently, he has explored a role of *LysM* domain protein in trapping the antibiotics during membrane penetration which is being proposed as a novel mechanism of antibiotic resistance. In another study he has further proved that CRISPRi mediated suppression of *bol*A gene leads to inhibit biofilm formation through curli and fimbriae inhibition. Hence, these may be proposed as a possible target for designing drugs against MDR strains as well as intervention of biofilm mediated infections.

These are few of the recent outstanding researches carried out in Dr Khan's lab, which may have great potential to control infections caused by highly drug resistant bacteria. His lab has further initiated to translate these technologies for the societal benefit.

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