

Genetics as a source of emerging resistance to antibiotics

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Mutations, plasmid/transposon/integron are the source of accumulation of mechanisms of resistance and appearance of novel mechanisms of resistance. Mutation is a source of acquired resistance mostly from naturally-occurring genes that are either modified or overexpressed. Mutation combined with plasmid acquisition is also a frequent mechanism for acquisition of novel mechanisms of resistance. Transposon and integrons play a significant role for transfer of antibiotic resistance genes and accumulation of antibiotic resistance genes. A series of examples illustrating these mechanisms of emerging antibiotic resistance will be taken from clinically-significant gram-negative bacteria.