

## Inhibitors of protein synthesis

<b>TABLE 30.10</b> Some Protein Synthesis Inhibitors		
Inhibitor	Cells Inhibited	Mode of Action
<i>Initiation</i>		
Aurintricarboxylic acid	Prokaryotic	Prevents IF binding to 30S subunit
Kasugamycin	Prokaryotic	Inhibits fMet-tRNA <sub>fMet</sub> binding
Streptomycin	Prokaryotic	Prevents formation of initiation complexes
<i>Elongation: Aminoacyl-tRNA Binding</i>		
Tetracycline	Prokaryotic	Inhibits aminoacyl-tRNA binding at A site
Streptomycin	Prokaryotic	Codon misreading, insertion of improper amino acid
Kirromycin	Prokaryotic	Binds to EF-Tu, preventing conformational switch from EF-Tu:GTP to EF-Tu:GDP
<i>Elongation: Peptide Bond Formation</i>		
Sparsomycin	Prokaryotic	Peptidyl transferase inhibitor
Chloramphenicol	Prokaryotic	Binds to 50S subunit, blocks the A site and inhibits peptidyl transferase activity
Clindamycin	Prokaryotic	Binds to 50S subunit, overlapping the A and P sites and blocking peptidyl transferase activity
Erythromycin	Prokaryotic	Blocks the 50S subunit tunnel, causing premature peptidyl-tRNA dissociation
<i>Elongation: Translocation</i>		
Fusidic acid	Both	Inhibits EFG:GDP dissociation from ribosome
Thiostrepton	Prokaryotic	Inhibits ribosome-dependent EF-Tu and EFG GTPase activity
Diphtheria toxin	Eukaryotic	Inactivates eEF-2 through ADP-ribosylation
Cycloheximide	Eukaryotic	Inhibits translocation of peptidyl-tRNA
<i>Premature Termination</i>		
Puromycin	Both	Aminoacyl-tRNA analog, binds at A site and acts as peptidyl acceptor, aborting peptide elongation
<i>Ribosome Inactivation</i>		
Ricin	Eukaryotic	Catalytic inactivation of 28S rRNA via N-glycosidase action on A <sup>4326</sup>