Molecular Biology

Site-specific scission of *E. coli* Ribosomal RNA by Aminophenantroline Linked to the 3' end of Transfer RNA ^{Mas}

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In order to study the interaction between the 3'- end of tRNA and rRNA, aminophenanthroline was linked to the adenine nucleotide at the 3' end of E.coli transfer RNA^{Phe}. This was done via a phosphoramidate linkage. The "modified" tRNA was then bound to 70S ribosomes under conditions described by Moazed and Noller (Cell, vol 47, 985-994,1986). Under reducing conditions and in the presence of Cu^{2+} the phenanthroline caused site-specific cleavage(s) of the 23S RNA. The positions of these sites were determined using primer extension analyses. The cleavages were found to be within a 10 Å "sweep" of the modified nucleotide. The data presented indicate that chemical nucleases, such as phenanthroline can be used to study biomolecular interactions and determine rRNA neighborhoods of ligands bound to the ribosome.