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A novel anti-tumor cytokine contains a RNA-binding motif present in aminoacyl-tRNA synthetases

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Endothelial Monocyte Activating Polypeptide II (EMAP II) is a novel pro-apoptotic cytokine that shares sequence homology with the C-terminal regions of several tRNA synthetases. Pro-EMAP II, the precursor of EMAP II, is associated with the multi-tRNA synthetase complex and facilitates aminoacylation activity. The structure of human EMAP II, solved at 1.8 A resolution, revealed the oligomer-binding fold for binding different tRNAs and a domain that is structurally homologous to other chemokines. The similar structures to the RNA binding motif of EMAP II was previously observed in the anticodon binding domain of yeast Asp-tRNA synthetase (AspRSSC) and the B2 domain of Thermus thermophilus Phe-tRNA synthetase. The RNA binding pattern of EMAP II is likely to be non-specific, in contrast to the AspRSSC. The peptide sequence that is responsible for cytokine activity is located mostly in the strand b1. It is divided into 2 regions by a neighboring loop.