Ribosomes - RNA machines that survive evolution pressure

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Ribosomes, the universal cellular machines, possess spectacular architecture accompanied by inherent mobility, allowing for their smooth performance as polymerases that translate the genetic code into proteins. Composed of RNA moieties, the site for peptide bond formation is located within a universal internal symmetrical region connecting all of the remote ribosomal features involved in ribosomal functions. The elaborate architecture of this region positions ribosomal substrates in appropriates stereochemistry for peptide bond formation, for substrate-mediated catalysis, and for substrate translocation. The high conservation of the symmetrical region implies its existence irrespective of environmental conditions and indicates that it may represent an ancient RNA machine. Attempts for proving this assumption will be discussed.